PRIVATE LAND FORESTS
A Public Resource

Ministry of
Natural
Resources
Ontario

Hon. Alan W. Pope
Minister

W.T. Foster
Deputy Minister

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PREFACE

For more than 100 years there has been strong public interest in private forest lands. The first tangible evidence of this interest comes from legislation in Ontario, Canada in 1871 and 1883 aimed at roadside tree and shelterbelt planting. Subsequently, in the early 1900s, considerable concern and activity began to be directed towards the reforestation of wastelands in southern Ontario. The establishment of the first provincial tree nursery, plus legislation after World War I to provide for provincial assistance in the development of municipal and county forests and the provision of trees for planting on private lands, increased the involvement of the province with private landowners. Demonstration forests and woodlots were established and a very limited attempt was made to provide advice on woodlot management to private landowners.

It was, however, not until after World War II that increased assistance and, in particular, the development of significant extension services became available to individual private landowners. For example, in 1942 there were only six foresters to carry out extension forestry and municipal forest management; and two of these were full-time superintendents of provincial tree nurseries. By 1949, 18 foresters were employed in extension work in southern Ontario. Further impetus was given to private land forestry programs by the Woodlands Improvement Act of 1966.

During the past century, and more particularly in the last five decades, there have been many reports, studies and briefs dealing with one or more aspects of private land forests. The Report of the Kennedy Royal Commission [1947], the Brodie Forestry Study Unit Report [1967], and the Forest Management Report [1976], together with briefs from the Ontario Professional Foresters Association, the Ontario Forestry Association and others, have all expressed concern and support for both the continuation and, in some cases, expansion of existing provincial private land forestry programs. In addition, there have been several reports on this subject prepared both for the Ministry, such as Professor P.L. Aird's report Government Incentives and Disincentives to Private Land Forestry [1980], and by the Ministry. With the exception of the Aird report, presentations on private land forestry in Ontario have not included much detail of how private land forests have been dealt with in other provinces and countries.

Therefore, in order to provide as complete a basis of information as possible, this paper not only deals with the status of private land forests in Ontario, but presents an account of such forests and related programs in many other jurisdictions in North America, Western Europe, Scandinavia, Japan, Australia, and New Zealand. By so doing, it is intended that the discussions and public response, especially from members or groups who are particularly interested in private forest lands, can more effectively focus on the subject in light of forestry practices elsewhere.

INTRODUCTION

Concern and involvement by Ontario with private land forests extends back to the latter half of the 19th century. By 1905, two areas were identified for action: the reforesting of wastelands that had largely been cleared for agriculture in southern Ontario; and the improvement of woodlots. Only the first, reforestation of wastelands, received any significant attention until the 1950s. Since 1966, the Woodlands Improvement Program has been a major factor in the upgrading of private land forests in southern Ontario.

In Ontario, approximately one-tenth or 41 966 km^2 [square kilometres] (10 362 000 acres) of the total area of productive forest land is privately owned. Two-thirds of this private forest land is in the Great Lakes—St. Lawrence Forest region and 30% in the Boreal Forest region [Fig. 1]. Only 3% is in the Deciduous Forest region. The most abundant forest cover type is hardwood [45%] followed by mixed wood [36%] and coniferous [15%]; 4% is classed as being in regeneration. In southern Ontario, the majority of forest growing stock [72.6%] is on private lands as compared with Crown lands. In the province, the annual allowable cut [AAC] for private forest lands is 17.5% of the total AAC for Crown lands.

Five companies own approximately 9720 km^2 (2.4 million acres) of private forest lands in northern Ontario; and a further 8100 km^2 (2 million acres) are held largely by individuals in the vicinities of Fort Frances-Rainy River, Thunder Bay, and the clay belt areas of the northern region.

Approximately 60% of those owning 20 ha (50 acres) or more of private forest lands in Ontario have properties which range from 20 ha to 81 ha (50 to 199 acres) in extent. Of all Ontario owners, 95% reside in the province, and 62% are located in the Eastern, Central, and Southwestern Regions. The single largest owner group is farmers [45% of all owners]. Ownership of woodlands is viewed passively by most; and the majority of owners undertake forest management to provide wood for their own use. Apart from mill license returns, which show that over the past years 10% to 26% of industrial wood comes from private lands, no complete record of total wood produced—including non-industrial—is available. A recent survey of domestic fuelwood consumption indicates that annually this accounts for over 2 707 392 m^3 [cubic metres] (956 000 cunits).

There are five Ministry of Natural Resources [MNR] programs available to private forest landowners:

- Provision of Planting Stock Program
- Woodlands Improvement Program
- Advisory Services Program [Forestry Extension]
- Managed Forest Tax Reduction Program
- Agreement Forests Program

Provision of planting stock began in 1905 and, excluding woodlands improvement agreements and agreement forests, a total of 591 million trees have been provided up to 1981. In 1981, the amount was 16 million trees. Costs to the purchaser are $25 per thousand trees and a handling charge of $10 per order. A minimum order is 100 trees; and an individual receiving trees must own at least 2 ha (5 acres) of land exclusive of buildings or structures. The cost of producing nursery stock greatly exceeds the price paid for it.

Woodlands improvement agreements were initiated in 1966 under the Woodlands Improvement Act in an attempt to not only reforest bare land, but to carry out precommercial stand improvement on the woodlots under agreement, which commits the private landowner to forest management for 15 years. Although the owner purchases nursery stock, the planting of trees and stand improvement are either undertaken or paid for by the Ministry. In the 15 years since its inception, 8597 W.I.A. agreements have been made, placing 1478.2 km^2 (364 978 acres) of land under agreement. Approximately half of the areas treated have been planted and the other half have received improvement practices. The majority of agreements [81%] are for properties larger than 4 ha (10 acres), and 88% of all agreements are in the Eastern, Central, and Southwestern Regions. As owners, farmers are less well represented in the Woodlands Improvement Program than indicated in their proportion of ownership of private forest lands.

Individuals, whose woodlands improvement agreements expire after 15 years, may enter into an advisory services agreement in which the Ministry provides only a work plan and the owner is responsible for the costs of all work done.

There are two main types of advisory services offered: one is answering queries and giving advice relating to trees and woodlands; and the other is marking timber for harvesting. Tree marking is carried out mainly in the Central and Southwestern Regions and particularly in stands of quality hardwoods. It is recognized as important in the improvement of growing stock because of the increasing likelihood of greater financial gain to the owner.

Under the Managed Forest Tax Reduction Program which was introduced in 1975, owners of qualifying forest lands can receive a rebate of 50% of their municipal taxes, based on property assessment. In 1981, the Treasurer of Ontario proposed that those farms and managed forests which qualify be relieved from property taxes. [The nature and details of this program are not yet available.]

In 1922, the first agreement forest was established. Now there are 59 forests under agreement with counties, townships, regional municipalities, conservation authorities, the National Capital Commission, and one company. These forests, which in 1980 comprised an area of 1100 km^2 (271 667 acres), are managed by the Ministry for a variety of forestry purposes including timber, wildlife, recreation, environmental protection, and water supply. Agreements cover periods of not less than 20 years. Upon their termination, the owner may pay the Minister all net costs charged against the forest; assume responsibility for the forest's management; sell the forest to the Crown for that part of the purchase price paid by the agreement holder; or extend the agreement for a further period of not less than 20 years or more than 50 years. In many areas, agreement forests have become an increasingly productive component of the landscape, and while the degree of financial return has varied, the overall benefits are generally considered to have been substantial.

Although the importance of windbreaks and shelterbelts is recognized, only limited assistance is available in Ontario.

Total funding of the private land forestry programs in Ontario, excluding the cost of planting stock production, was $5.16 million for the 1980-81 period. MNR distributed this funding in the following way: Woodlands Improvement Program 36%, Advisory Services 29%, Agreement Forests Program 21%, and transfer payments 14%. Over the six years prior to 1980-81, expenditures on private land forestry programs increased at a compound annual rate of 11%. Although this was at the same rate as total Ministry expenditures, it was much less than the increase for forest management activity as a whole.

Income tax treatment recognizes four classes of forest property—those with timber limits and cutting rights; farm woodlots; tree farms; and those with forest plantings. Forest management expenses, normally eligible for deduction against forest income, include property taxes, interest paid on loans or mortgages for forest management activities, reforestation costs, stand tending, site improvement, and direct harvesting costs.

In Ontario, there are several associations and one cooperative which represent, to varying degrees, the interests of private forest landowners. The Ontario Forestry Association with its broad concerns and objectives, primarily focuses on education at all levels in its attempt to increase the awareness, understanding, and importance of forests and forestry in Ontario. There are three associations of owners: the Huronia Woodlot Owners, which is concerned with promoting better plantation and woodlot management; the Christmas Tree Growers Association of Ontario Inc., an association for producers; and the Ontario Maple Syrup Producers Association [OMSPA], also an association for producers.

Beginning in 1980, the Ministry of Natural Resources allocated an annual grant to the Christmas Tree Growers Association to promote the production of improved trees. It is anticipated that Ontario-grown trees will be insufficient to satisfy provincial demands in the mid-1980s.

Maple syrup production is a long-standing crop with both historic and cultural links in eastern Canada. Ontario's production has declined from a maximum of 3.5 million ℓ (778 000 gal) in 1926 to 468 238 ℓ (103 000 gal) in 1980. Ontario now imports approximately two-thirds of the maple syrup it requires. Since 1967, the Ontario Ministry of Agriculture and Food has provided a full-time maple syrup specialist and support for OMSPA. MNR offers advice and assistance on sugar bush management, but does not have a full-time specialist.

In Canada, the relationship between agriculture and forestry has been of less consequence than in many other countries; despite the facts that substantial areas of private land forests are owned by farmers, and the value of forest products either as value in kind or from sales constitutes significant amounts. For example, in 1980 the total value of forest products produced on farms in Ontario was $26.4 million. About 18% of the value of all farm income in kind, i.e. products harvested and used on the farm, was forest products. While the value of forest products comprises a very small proportion of the total farm cash receipts [0.3%], they are important in providing both materials and cash flow complementary to and supportive of the farm economy.

Ontario's agricultural programs are notable for being comprehensive and integrating programs of education, research and extension involving governments, universities and farmers. There is, however, little if any formal mechanism for providing information and education to farmers on forest practices in these agricultural programs.

In Canada, there are estimated to be about a half million owners of 227 286 km^2 (56.12 million acres) of private forest land or 9% of the total forest land area. The largest amount of private forest lands [82%] are found in Ontario, Quebec, and the Atlantic Provinces. Private land forests in Ontario comprise 18.5% of the total for Canada.

In Canada, it is estimated that as much as 30% of the supply of industrial wood comes from private lands. Total 1980-81 expenditures by governments on private land forests and forestry is estimated at $46.28 million, exclusive of any amounts spent by the owners.

Small private land forests in British Columbia occupy 15 998 km^2 (3.95 million acres) or 4% of the province's productive forest land. Since 1951, owners of Taxation Tree Farms have been afforded lower property taxes in return for a commitment to practice forest management on their lands. Approximately 23% of the Taxation Tree Farms are also included in tree farm licenses. In these licenses, private land is managed in conjunction with Crown land tenure by the private owner. In both forms of tree farms, forest management plans must be approved by the chief forester of the Ministry of Forests, but financial assistance in the form of credit to stumpage is available to tree farm licensees only. A woodlot license is another form of tenure in which a private landowner can combine private holdings with Crown land forests for management with an upper limit of 400 ha (988 acres) of Crown land. Presently, British Columbia is developing an extension program to assist small private forest landowners in forest managment.

In Alberta and Saskatchewan major private land forestry programs are those directed towards shelterbelt plantings on farm land, although Alberta also supplies planting stock for woodlots and Christmas tree plantings. Tree seedling production for shelterbelts in Saskatchewan began in 1902 and is now primarily undertaken by the Prairie Farm Rehabilitation Administration. Manitoba maintains a provincial nursery which supplies seedlings to private landowners.

Canada's largest and most comprehensive provincial programs for private land forest owners are found in Quebec, a province with 70 912 km^2 (17.5 million acres) of private forest lands. The largest owner group is farmers [41%]; and of the 125 000 owners of forest land under 810 ha (2 000 acres), 85% own 122 ha (300 acres) or less. Private land forestry programs are administered mainly by the Québec Ministère d'Energie et des Ressources, although the forestry credit program is in the Office du Crédit Agricole du Québec. Assistance programs are mainly directed through two organizations: the Fédération des Producteurs de Bois du Québec, and the Groupements Forestier. The Fédération is an association of wood producers and although its primary concern is with marketing and price negotiations, it is also involved in forest inventory and management plans for private land forests. The Groupements Forestier are associations of owners, organized since 1972, who provide management and development of woodlands. The objective of the Groupements is to allow for the combining of small properties into larger units for purposes of management. There are now 44 management units and approximately 3786 km^2 (935 000 acres) in Groupements. Major government financial support to private landowners is given through the Fédération and Groupements. In addition, long- and medium-term loans may be obtained by individuals and associations for purchase or management of private forests from the Office du Crédit Agricole. Maximum value of long-term loans is $40 000 to individuals and $500 000 to corporations; the maximum term being 60 years. Medium-term loans are for a period up to 15 years and cannot exceed $25 000 to an individual or $100 000 to a corporation. Loans are given at the prime bank rate plus one half of one per cent, but the borrower can have the rate reduced by 5% each year for a maximum of 15 years if the management plan is followed for the forest property to which the loan applies. Legislation governing designated agricultural regions in Quebec also applies to sugar maple woodlots. Here, owners of woodlots receive deductions in property taxes which vary according to circumstances.

Prince Edward Island provides assistance to owners of private woodlots under a Forest Resource Management Incentive Program, begun in 1980. Owners of 10 ha (25 acres) of woodland are eligible for financial grants for road construction and management.

New Brunswick has 35 000 small ownerships of 19 440 km² (4.8 million acres) that comprise 29% of the province's productive forest area. Large ownerships make up a further 23% of the forest area. The balance of 48% of the total forest area of 63 180 km² (15.6 million acres) is Crown land. The New Brunswick Department of Natural Resources administers the private land forestry programs through its Forest Extension Service. Two incentive programs to landowners are available. Under the Private Woodlot Management Assistance Program, the owner of a minimum of 10 ha (25 acres) undertakes the work but is provided with financial and technical assistance for such activities as reforestation, stand improvement, roads, Christmas tree production, and sugar maple stand management. The Forestry Employment Program is for owners who cannot undertake the work themselves. Work is performed by crews employed or directed by a regional marketing board, where 90% of the cost is paid by the government and 10% by the owner. There are seven regional marketing boards in New Brunswick and their primary function is to negotiate prices and delivery schedules for wood produced by their members. The boards are financed by a levy on wood sold. In addition to government assistance, landowners also receive support from companies in other areas.

Nearly three-quarters of Nova Scotia's forested land is privately owned. There are about 31 000 small woodland owners of 22 680 Km² (5.6 million acres), with an average area of 75 ha (185 acres) per owner. A major private land forestry program was launched in 1977 with four components. In the first, owners of 20 ha to 30 ha (50 to 74 acres) are eligible only for silviculture assistance, while owners of 30 ha to 2025 ha (75 to 5000 acres) receive a full range of assistance including roads and boundary line surveys. A second component provides assistance to small woodland owners who have organized into groups known as Group Management Ventures. There are eight group ventures that operate as cooperatives or limited companies. Forest improvement work is funded by the government. A third component authorizes financial assistance to pulp and paper companies owning more than 2025 ha (5000 acres). A fourth component provides financial assistance to landowners of more than 2025 ha (5000 acres). In addition to government assistance, one pulp and paper company has set up a woodlot management program for private landowners.

This large-scale private land forestry program has produced a number of private forestry consultants as well as increased employment of foresters and forestry technicians.

When compared with Ontario, the United States shows three significant differences in relation to private forest lands. First, of the 72% of commercial forest area that is privately owned, 58% is classed as non-industrial ownership; this includes farmers or other private owners and not forest companies. Second, the U.S. Department of Agriculture [USDA], in cooperation with the state agencies, plays an important role in the support of private land forestry. Third, the forest industry provides substantial support to private landowners in certain areas of the U.S. Various studies have projected increased requirements for timber, and non-industrial private forest lands are perceived as the most important source for this increase. There are two main federally funded private land forestry programs that are administered at the state and county levels. Both are cost-sharing programs in which the owner receives compensation for 50% to 80% of his costs. The Agricultural Conservation Program [ACP], established in 1936, provides annual and long-term [three to ten years] agreements with owners for tree planting, timber stand improvement, and other soil and water conservation practices. Under ACP, the New England Pilot Fuelwood Project was established in 1979 as a four-state program to assist owners to improve their woodlands by the removal of fuelwood. Currently, the project has expanded to the six New England states, and in 1982 a further six states are to be included.

The largest federal program for private landowners is the Forestry Incentive Program [FIP]. Authorized in 1973, it is jointly administered by the Agricultural Stabilization and Conservation Service [ASCS] and the Forest Service of the USDA. The Agricultural Conservation Program is mainly administered by the former service. The principal purpose of FIP is to increase the supply of timber from private non-industrial woodlands, and to ensure that other values and uses on these lands are maintained. The FIP has a minimum requirement of 4 ha (10 acres) and a maximum of 405 ha (1000 acres) to which assistance is normally applicable. Forest land to be eligible must also be capable of growing a minimum of $3.5 m^3$/ha/yr (50 ft^3/ac/yr). Owners of land, who regularly engage in manufacturing forest products or who are public corporations, are ineligible for assistance. Landowners of 16 ha (40 acres) usually receive priority and this area size is the minimum requirement for a long-term [three to ten years] agreement.

The use of consultants and private enterprise is encouraged in accomplishing FIP practices. Cost-sharing rates vary from area to area and are based upon recommendations by the state forest services and the state ASCS committees.

Federal and state governments may be involved in cooperative forest management programs. The extent of services offered to landowners is determined by each state, and most of the states offer limited free services for up to five days for any individual. Much of the assistance is for marking timber to be harvested and providing technical advice and plans.

The USDA maintains a large extension service that functions in cooperation with both state extension services and land grant colleges. The Science and Education Directorate of the USDA also lends support and administers forestry extension programs through the land grant colleges.

Several states have their own forestry incentive programs in addition to the two federally funded ones, ACP and FIP. A number of states have tax provisions which apply to private forest lands, and finance forestry practices and assistance in this manner. Fifteen states have legislation or regulations controlling, to various degrees, forestry practices on private lands. The forest industry has developed several assistance programs for private landowners, largely because of concerns by companies of ensuring future wood supplies. Such assistance might involve the leasing of an owner's land for periods of up to 40 or 50 years; where the land is managed by the company, possible financial arrangements could include annual payments.

Grouping of owners into cooperatives has not been a prominent feature of private land forestry in the United States. The American Forestry Association, organized in 1875, is devoted to the conservation and wise use of forests and related resources. It has a large membership and is supported by many landowners. The tree farm movement is sponsored by the American Forest Institute—an organization supported entirely by wood-using industries. Regionally, there is the New England Forestry Foundation that was established in 1944; this is a non-profit organization that offers professional and technical assistance to its landowners.

In the southern and southeastern United States, the Federal Land Banks extend credit to owners of woodlands under more favourable terms than those usually available from commercial financial institutions.

The most important change in federal taxation, for owners engaged in reforestation, came in 1980 when the Packwood Bill provided a tax credit with a seven-year amortization on the first $10 000 of reforestation expenditures each year.

Studies of nine European countries show that farmers are the largest owner group, and that there are differences in the way private land forest owners are treated with respect to provision of assistance, taxation, and control of activities on private woodlands. For example, in France, fragmentation of ownership into small parcels of land is perceived as the single major problem; therefore, state subsidies and other financial assistance have been directed towards dealing with this matter.

The Federal Republic of Germany is a country where the state has a long history of regulation of forestry practices on private forest lands. Although regulation was solely the responsibility of the länder or provinces until 1975, there is now a federal forest law that sets forth the broad framework for forest regulations. As in many countries, much of the state assistance goes to associations of owners, some of which date back to the early 1900s.

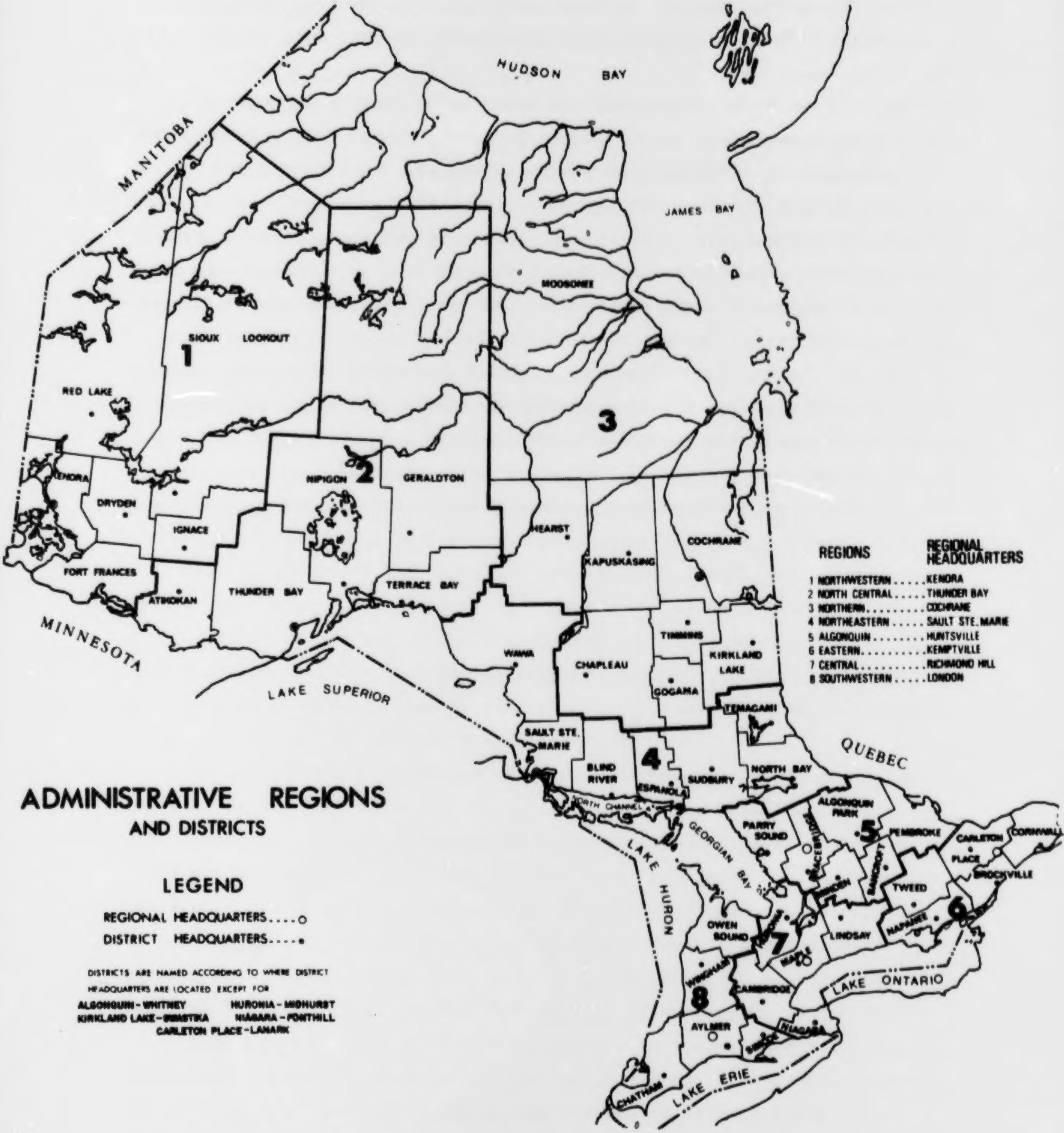
The formation of the Forestry Commission in the United Kingdom in 1919 brought state involvement into forestry and private land forests. A main objective has been the afforestation of bare land both by the Commission and private landowners, together with the control of felling of timber on private woodlands. Incentives to owners have largely been financial grants for plantation establishment.

The Scandinavian countries of Norway, Sweden, and Finland all have legislation and incentives for private forest landowners. The commitment of an owner to practice forestry and regenerate land from which forest crops are harvested is required, but the owner is provided with financial assistance and certain tax relief. As in other European countries, much of the assistance and implementation of forest practices are directly through associations of owners. Finland is an exception in that forest taxes and fees are based on the productivity of an owner's land.

With the exception of Tasmania, Australian states have not fully dealt with private land forests. In 1977 under the Forest Act, Tasmania set up a private forestry division and instituted several financial assistance schemes such as grants, loans and annuities, with particular emphasis on establishment of plantations. A proposed Forest Practices Act has yet to be completed.

As in Tasmania, the support for private land forests in New Zealand is directed mainly towards encouraging the establishment and tending of plantations. This encouragement is given by means of grants, loans and income tax incentives.

In Japan, forests cover 68% of the land or about 250 290 km^2 (61.8 million acres) of which 59% are privately owned. Two-thirds of this ownership is by farmers or other individuals. Responsibility for forestry is with the Forestry Agency of the Ministry of Agriculture, Forestry and Fisheries; it has ten regional offices and a large staff. Assistance to owners of private forest land is by grants, loans, and cost-sharing arrangements which may involve the local government or prefecture. Two laws— the Forest Law and the Forestry Basic Law—address forest lands and forestry practices. In addition to the systems for financial support, there is much reliance on the associations that represent approximately 2000 landowners owning 119 880 km^2 (29.6 million acres) of forests. The associations, which provide marketing and management services, are linked into regional and national groups where they are represented on a national council under the director-general of the Forestry Agency.


HUDSON BAY
JAMES BAY
MANITOBA
MINNESOTA
QUEBEC
LAKE SUPERIOR
LAKE HURON
GEORGIAN BAY
NORTH CHANNEL
LAKE ONTARIO
LAKE ERIE
1
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5
6
7
8
SIOUX LOOKOUT
RED LAKE
MOOSONEE
KENORA
DRYDEN
IGNACE
FORT FRANCES
ATIKOKAN
THUNDER BAY
NIPIGON
GERALDTON
TERRACE BAY
HEARST
KAPUSKASING
COCHRANE
WAWA
CHAPLEAU
TIMMINS
GOGAMA
KIRKLAND LAKE
TEMAGAMI
SAULT STE. MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
BRACEBRIDGE
PEMBROKE
BANCROFT
MINDEN
CARLETON PLACE
CORNWALL
BROCKVILLE
TWEED
NAPANEE
LINDSAY
OWEN SOUND
MAPLE
WINGHAM
CAMBRIDGE
AYLMER
NIAGARA
SIMCOE
CHATHAM
ADMINISTRATIVE REGIONS
AND DISTRICTS
LEGEND
REGIONAL HEADQUARTERS....○
DISTRICT HEADQUARTERS....●
DISTRICTS ARE NAMED ACCORDING TO WHERE DISTRICT
HEADQUARTERS ARE LOCATED EXCEPT FOR
ALGONQUIN - WHITNEY
HURONIA - MIDHURST
KIRKLAND LAKE - SWASTIKA
NIAGARA - FONTHILL
CARLETON PLACE - LANARK
REGIONS
REGIONAL HEADQUARTERS
1 NORTHWESTERN......KENORA
2 NORTH CENTRAL......THUNDER BAY
3 NORTHERN...........COCHRANE
4 NORTHEASTERN......SAULT STE. MARIE
5 ALGONQUIN..........HUNTSVILLE
6 EASTERN............KEMPTVILLE
7 CENTRAL............RICHMOND HILL
8 SOUTHWESTERN......LONDON

Figure 1. MNR administrative regions and districts

I. AN HISTORICAL PERSPECTIVE

From the earliest days of settlement, the clearing of forests on private lands has been a major activity. Initially, clearing proceeded for the most part with little concern for conservation, shelter, erosion, or sustaining a supply of fuelwood or timber. "The forests must go to provide for man's progress," was the thought—progress in agriculture, that is.

The rapid destruction of forests continued unchecked for several decades. Overclearing for agriculture, grazing of woodlands by livestock, fire, and indiscriminate cutting for timber and fuelwood were the main causes of woodlot reduction and degradation during the 19th century. At times, wood ash or potash was one of the few items that brought a cash return to the settler.

In August 1882, many Canadians participated in the American Forestry Congress held in Montreal that followed an earlier meeting held in Cincinnati that same year. It was following this conference that R.W. Phipps of Toronto was assigned by the Ontario Government to prepare a report on the forests of Ontario. His report, the first of its kind in Canada, entitled Necessity of Preserving and Replanting Forests, was issued in 1883. In this report, Phipps discussed the problem of overclearing as follows:

> the settler here, in many cases cleared much to his own injury, hill, swamp, sand and hard pan which might well have been left untouched while there was at no great distance plenty of excellent land. That poor land left in forest would have, by its climatic influence, rendered much more easy and consequently, much more lucrative, the production of crops on the other and would if fairly used, have continued an inexhaustible reserve of timber, of firewood and of fence.

Another destructive agent of private woodlands was grazing. During the 19th century, cattle and other livestock were grazed extensively on farm woodlands. Pointing out the advantages of keeping livestock out of woodlands, R.B. Fuller of Toronto wrote in the Canada Farmer, December 15, 1870:

> A friend of mine John M. Ball Esq. of Niagara has not allowed his cattle or horses, or sheep, to run in his "bush" for many years past and he recently told me that thousands and thousands of young trees are growing up in his bush to the height of ten and twenty feet which will replace those trees that will be cut down when they cease growing. In this way he expects and I think with reason that his bush will be continually replenished as the seeds of the old trees strike root and send up young ones every year.

> It is true, Mr. Ball loses a little pasture about the skirts of his bush but that loss is nothing to what he gains by keeping his animals out of his bush who would destroy the young shoots by browsing if he allowed them as most farmers do, the run of it.

While some farmers had made significant attempts to manage their woodlands, most had not.

Of considerable importance was the harvesting of fuelwood for domestic heating on the farm. However, heavy cutting for fuelwood often created problems.

A concerned citizen wrote in the Ontario Farmer, March 1869:

> Perhaps the hardest labour the farmer has to do in winter is chopping firewood. Nearly all farmers whose land is wooded carry on an incessant warfare with timber. In fact so much has been chopped from our forests that wood is getting very scarce and dear. Should there not be some way of remedying this evil. If our woods disappear so rapidly during the next century as they have, what will the coming generations do for fuel.

In 1886, the first fuelwood survey was carried out in the province. Fuelwood production on Ontario farms had peaked in 1881 to 19 575 000 m^3 (5.4 million cords). The survey was carried out because of concern over future fuelwood supplies. It indicated that in many townships fuelwood was being replaced by coal and in some townships only a ten-year supply remained. By 1910, a large number of farmers in southwestern Ontario were burning coal as a result of the unavailability of wood; in some instances all wood had been cut from their farms.

A portion of the Clerk of Forestry Report [1897] was devoted to an inquiry as to the extent of areas of woodland in the settled portion of the province. The survey indicated that 30 counties in Ontario had less than 25% of their total area under timber; the portion of woodland in one county was only 5%. The Clerk of Forestry concluded:

> that throughout the greater extent of the really good and fertile agricultural region of southern Ontario where the land has been longest settled and the greatest inducements offered by natural advantages to the permanent occupation, the percentage of forest has been reduced far below that which should have been retained to ensure the perpetuation of these favourable conditions.

By 1905, when E.J. Zavitz was appointed lecturer in forestry at the Ontario Agricultural College, concern for lack of woodlands in southern Ontario had focused on two main areas. The first was the need for management of existing woodlots. The second was the reforestation of wastelands, much of which consisted of lands cleared for agriculture and abandoned.

While Zavitz made great strides in reforestation, his accomplishments in woodlot management were minimal at that time. In 1913 he reported:

> The improvement in the condition of the Ontario woodlot is a most difficult problem. When we realize the difficulty in interesting the landowner in improving methods relating to annual crops from which he derives his livelihood, it can be readily understood that the woodlot, which only gives small returns with the long time element as a large factor we can realize that it will be difficult to secure radical improvements.

The improvement of woodlots seems generally to provide a greater challenge for the development of appropriate programs and incentives than does reforestation alone.

One of the earliest attempts to use the mechanism of property taxes as an incentive for woodlot improvement occurred in 1906 when the Government passed an act providing for the exemption of woodlands from taxation. The act stated that the council of any township may pass a bylaw exempting woodlands in whole or in part from municipal taxation including school rates, provided that not more than 0.4 ha in 4 ha (1 in 10 acres) of such woodlands up to a total of 10 ha (25 acres) were exempted. Later, the maximum was changed to 8 ha (20 acres), and reforested land was not assessed at a greater value by reason of tree planting. Forest landowners receiving tax exemption were not permitted to graze livestock on their woodlands.

The tax exemption program did not succeed in improving woodlots mainly because the incentive, which amounted to only a few dollars on a 4 ha (10 acre) woodlot, was inadequate. It was not until 1975 that a new property tax incentive—the Managed Forest Tax Reduction Program—was introduced.

There was also a realization that some form of extension program was needed if private woodlots were to be improved. In 1929, a forester named I.C. Marritt was appointed to develop such a program. Marritt found, especially during the early years, that woodlot owners believed a forester was only interested in reforestation by planting, and as a result there were few requests for advice from private owners regarding the management of their woodlots. He determined that the primary reason for the previous mismanagement of private woodlots was that the owners did not understand forestry principles. Therefore, he established a demonstration woodlot program in 1933 to provide examples of the results of proper forestry practices. A "Demonstration Woodlot" sign was placed on each property, usually adjacent to the road, to identify the woodlot. During the first year, 56 woodlots were chosen and at least one demonstration woodlot was planned for each township. In addition to private woodlands, several municipalities agreed to have woodlands designated as demonstration areas.

In conjunction with the program, newspaper articles and lectures on the value of managed woodlots were given, and by March 31, 1941 a total of 428 demonstration woodlots had been set out. While no doubt the program had a significant influence on these woodlots, it was not generally effective. Extension programs not only required demonstrations but also personal contact of forestry staff with the owners.

In 1942, when it was realized that more staff were required for an extension program, the Ontario Department of Land and Forests established three forestry positions in the field. By 1951, a total of 23 foresters were doing extension work in southern Ontario.

Yet, during that same year, Marritt remarked:

> The woodlot situation in Ontario is far from satisfactory, but much progress has been made in the past twenty-five years. The next ten years should mark much further advance as woodlot owners are now realizing that their woodlots need attention and there are zone foresters available to give them technical advice. It is too bad that a large percentage are in a deplorable condition, and it will take several decades to convert them into fairly satisfactory woodlots. In most cases, however, it is not as difficult as starting with bare land and reforesting.

The woodlot extension program was given increased support by the passing of the Woodlands Improvement Act in 1966, whereby a woodlot owner could place his lands under agreement for 15 years. There are now over 8000 agreements and these, together with the advisory services to woodlot owners, are the basis of the Ministry's program.

Productive woodlots can only be maintained by proper cutting practices. Clearing and overcutting for short-term gain are most damaging. In 1946, the Trees Conservation Act was passed in an attempt to protect woodlands from such clearing and overcutting. In part, this legislation was a response to concern by some counties over the clearcutting of forests on submarginal lands. The act gave the county or territorial district township councils the right to pass bylaws to restrict and regulate the cutting of trees in any part of the county or township. Enforcement of the bylaws became the responsibility of the municipality. Wellington County, in 1946, was the first county to pass a bylaw to control cutting. Twenty-two municipalities have tree-cutting bylaws at present. The Trees Act [1979] is the current legislation that restricts and regulates the destruction of trees.

The first legislation in Ontario dealing with tree planting was the Tree Planting Act [1871]. It encouraged the planting of trees along roads and gave ownership of the trees to the adjacent landowners. Apparently this act elicited little response, and in 1883 new legislation—the Ontario Tree Planting Act—was passed. The objective was, again, to encourage the planting and care of trees for purposes of shade and ornament along public highways and boundary lines between adjoining farms.

The act authorized municipalities to pay landowners up to 25¢ per tree; one half of the costs to be shared by the province. Although 75 000 trees were planted, the program was not considered successful. Nevertheless, the growth of those trees has noticeably contributed to the amenities and sylvan aspects of rural southern Ontario.

Recognition of the values of forests, tree planting, and reforestation in Ontario originated with a farm group—the Ontario Fruit Growers Association, organized in 1859. Their interest in tree planting arose from the importance of forest trees in providing shelter for orchards to protect fruit trees from cold winds, and in reducing windfalls. The association was successful in encouraging the commencement of experimental tree planting at the Ontario Agricultural College in 1880. This was an important advancement in reforestation since it was the first experimental tree planting carried out by the Government of Ontario.

The farm organization responsible for the establishment of the first provincial nursery to supply landowners with forest tree planting stock was the Ontario Agricultural and Experimental Union formed in 1879 at the Ontario Agricultural College, Guelph. In 1900, a forestry committee was appointed by the Union; and at a meeting held in December 1902, it was moved by N. Monteith of Stratford and seconded by E.C. Drury of Crown Hill, that:

> The Experimental Union recognizing the urgent necessity for action in the reforestation of the wastelands throughout old Ontario would recommend that the Department of Crown Lands be requested to provide material sufficient to reforest areas sufficiently large to provide forest conditions in typical situations throughout Ontario, the Union undertaking to supervise the distribution.

In 1903, the forestry committee strongly urged the Government on the necessity of two factors relating to reforestation:

i) For undertaking the practical reforestation of areas sufficiently large to afford forest conditions as a demonstration of the utility of the work on these lands, which from their surroundings enjoy practical immunity from fire.

ii) For collecting accurate information from the municipal authorities as to amount of lands unfit for agriculture in the settled townships of Ontario.

The resolution resulted in the hiring of Dr. Judson Clarke, in August 1904, as the first provincial forester in the Bureau of Forestry of the Crown Lands Deparment. Clarke, a graduate of the Ontario Agricultural College in 1896, had studied forestry at Cornell University, New York under Dr. B.E. Fernow who, in 1907, became the first dean of the Faculty of Forestry, University of Toronto.

In 1905, the Bureau of Forestry became the Bureau of Colonization and Forestry and was transferred back to the Department of Agriculture.

During the same year that Dr. Clarke was appointed, Minister of Agriculture, the Honourable John Dryden, established a forest tree nursery at the Ontario Agricultural College in Guelph and placed E.J. Zavitz in charge. The nursery was 0.8 ha (2 acres) in extent, and the first seedlings grown were Norway spruce, white pine, white ash, hard maple, American elm, and tulip tree.

In the fall of 1905, Zavitz was appointed a lecturer in forestry at the college. There he not only continued to develop the tree nursery, but also set up a cooperative tree planting program with farmers. In 1907, he issued the first Ontario Government publication on farm forestry that included information on reforestation. On November 8, 1912, he was transferred from the Department of Agriculture to the Department of Lands, Forests and Mines as Director of Forestry.

The first two cooperative planting projects on private lands which used 10 000 trees were completed in the spring of 1905. By 1908, the planting program had grown to 380 000 trees per year; a new provincial forest tree nursery was established at St. Williams; and some well-established plantations were growing on waste portions of farmlands. A total of 3 440 000 trees were distributed between 1905 and 1919. Shortly thereafter distribution of nursery stock to private landowners dropped to only 40 000 trees. This drop was directly related to the difficulty in securing seed during World War I.

In 1919, the United Farmers of Ontario chose E.C. Drury as their party leader. Under a coalition Government in 1920, he became Premier of Ontario. Here were two persons—Drury and Zavitz—both committed to reforestation, and both in key positions. They believed that a forestry program involving municipalities was necessary to reforest the large wasteland areas surveyed years earlier by Zavitz. The need for facilities to supply seed and nursery stock was obvious if an enlarged program was to be initiated. As a result, the tree seed plant at Angus was opened in 1920 and two nurseries and forest stations were added in 1922. In keeping with the policy of establishing nurseries and forest stations within large wasteland areas, the nurseries were located at Midhurst and Orono.

Until 1922, the annual distribution of nursery stock to private owners had never surpassed 400 000 trees. However, as a result of the increased production of nursery stock coming from these nurseries, the distribution climbed to 5.27 million trees in 1925. In 1921 and 1923, transplant nurseries were opened at the Sand Banks in Prince Edward County and at Kemptville. The latter was fully developed as a nursery after World War II.

The Reforestation Act of 1921 gave impetus to the Agreement Forests Program which has continued to the present. In 1922, a long-awaited goal of Premier Drury and Zavitz was realized when the County of Simcoe acquired 405 ha (1000 acres) of wasteland which became Hendrie Forest, the first agreement forest in Ontario. At present, there are 58 agreement forests with counties, regional municipalities, townships, conservation authorities, the National Capital Commission, and Domtar Inc. that cover 110 025 ha (272 000 acres) of Ontario forest lands.

In retrospect, it can be seen that over the past century or so, three principal areas of public concern have emerged and been recognized through legislation and Government programs dealing with trees and woodlands. These three areas—trees for amenity values, the reforestation of wastelands, and the management of existing woodlands—have received varying support over time. Emphases on one or the others have changed, and often forestry programs have been used to resolve more than one of these concerns. To a very large degree, the programs have dealt almost exclusively with private land forests in southern Ontario. It was only after the late 1950s that there was any formal effort to direct staff and programs to the north. Even today the Ministry's programs for private land forests in northern Ontario are minimal.

It is also clear that in contrast to the immediate visible achievement realized when an area of wasteland or cleared land is reforested, the gains from improvement practices in existing woodlands are less readily perceived and can usually be measured only over a period of years. The difference between these two areas—reforestation and woodlot improvement-have often been heightened by the fact that reforestation has been seen to be an effective control for erosion and other environmental concerns, whereas improvement cuttings in existing woodlots have not. Indeed, in more recent years improvement treatments in woodlots have been viewed negatively by some as a disturbance of the natural system.

There is every reason for a sense of achievement when the accomplishments in Ontario's private land forestry are reviewed. Yet, there is also a sense of concern for both the present and the future. It is the purpose of this paper to present a factual basis that will encourage discussions and, ultimately, decisions relating to these concerns.

II. PRIVATE LAND FORESTS AND OWNERSHIP IN ONTARIO

A knowledge of the extent and nature of private forest lands, together with an understanding of who the owners are and their attitudes to their lands, are essential. The only complete summary of both private [patented] and Crown forest lands in Ontario was prepared by R.M. Dixon in 1963.[1] Although there has been a continuing re-inventory in Ontario since, no comprehensive updating is yet available. While undoubtedly certain changes have occurred, it is probable that the relative orders of magnitude have not varied significantly.

Information on private landowners is based on the 1981 Ontario Rural Landowner Survey conducted by the Ministry. Questionnaires were sent to landowners with a minimum of 20 ha (50 acres) of property. In southern Ontario the sampling rate was 5%, and in northern Ontario it was 10% based on a systematic sampling from land tax assessment records. The response rate of 75.5% was based on 12 400 questionnaires that were sent out.

Extent and Nature

The total area of productive forest land[2] in Ontario is 426 311.1 km^2 (105 262 000 acres) of which 41 996.1 km^2 (10 362 000 acres) are private lands. In 1978, the estimated land base for forest production was revised and deductions for inaccessibility, operability and other uses, which precluded forestry production, were made. These deductions were mainly applied to Crown forest lands so that the area of these lands available exclusively for forest production was reduced to 208 170 km^2 (51 400 000 acres). Reductions for private forest lands were much less, and an area of 38 693.7 km^2 (9 554 000 acres) was considered available. In this report, however, the private forest land base of 41 966.1 km^2 (10 362 000 acres) will be taken as the datum; since the basis for deductions on private forest land is less clear than for Crown forest lands, the reduction amounts to less than 10%. Most other data relating to distribution of these private forest lands as well as their associated growing stock and annual allowable cut are based on the value of 41 966.1 km^2 (10 362 000 acres). These lands, therefore, constitute 10% of the total productive forest lands of the province or 17% of the area available for production.

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[1] Ontario. Ministry of Natural Resources. The Forest Resources of Ontario. Toronto, 1963.

[2] Productive forest land is defined as land bearing or capable of bearing timber of a commercial character, and not withdrawn from such use.

Three forest regions [Fig. 2] characterize Ontario's forests—the Boreal Forest, Great Lakes-St. Lawrence Forest, and the Deciduous Forest.[3] The Deciduous Forest region is unique in Canada to Ontario and contains species such as tulip, sassafras, black walnut, and many other so-called Carolinian species. The distribution of productive private forest lands within the three forest regions is given in Table 1.

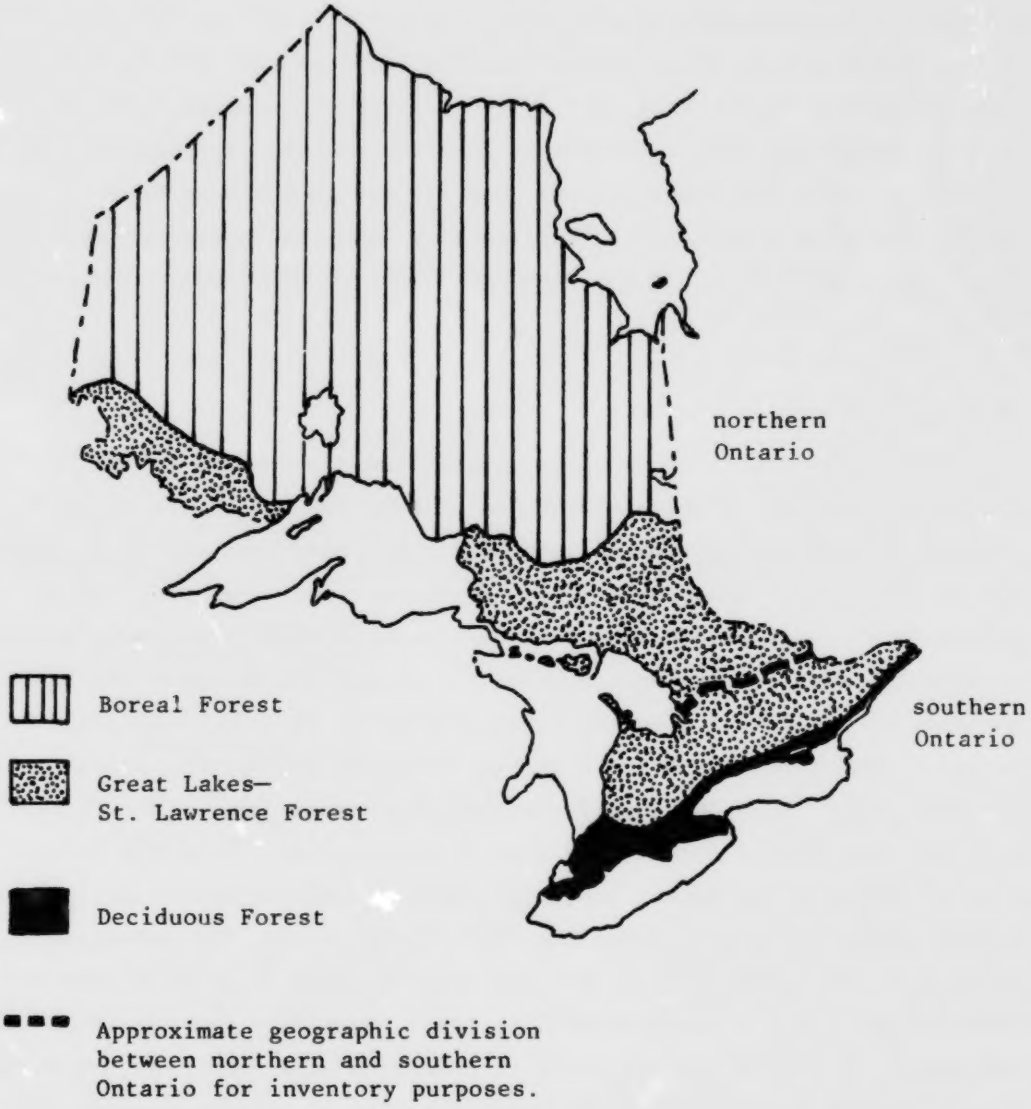
northern Ontario
southern Ontario
Boreal Forest
Great Lakes—St. Lawrence Forest
Deciduous Forest
Approximate geographic division between northern and southern Ontario for inventory purposes.

Figure 2. The forest regions of Ontario

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[3] Canada. Canadian Forestry Service. Forest Regions of Canada. Ottawa, 1977.

TABLE 1

DISTRIBUTION OF PRIVATE PRODUCTIVE FOREST LAND BY FOREST REGION

	Area in Square Kilometres (Acres)	Percentage of Total Area
Boreal Forest	12 466 (3 078 000)	30
Great Lakes—St. Lawrence Forest	28 242 (6 973 410)	67
Deciduous Forest	1 258 (310 622)	3
Total forest	41 966 (10 362 032)	100

The preponderance of ownership in the Great Lakes—St. Lawrence Forest region, with its high component of hardwood species, is reflected in Table 2 by the breakdown of forest cover types on private forest lands.

TABLE 2

DISTRIBUTION OF PRIVATE FOREST LAND BY MAJOR FOREST COVER TYPE

	Area in Square Kilometres (Acres)	Percentage of Total Area
Coniferous	6 472 (1 598 000)	15
Hardwood	18 760 (4 632 000)	45
Mixed wood	14 936 (3 688 000)	36
Regenerated forest	1 798 (444 000)	4
Total forest	41 966 (10 362 000)	100

The small proportion of the coniferous forest type [15%] on private lands contrasts with the larger proportion [49%] on Crown productive forest lands, and is probably a function of two factors. First, most private lands occur in forest regions where hardwoods are prevalent. Second, in the settlement of private lands, much of the commercial coniferous timber was cut and utilized or sold to provide a cash income for the owner.

In Table 3, the distribution of area and volume of forest growing stock are given by location in southern and northern Ontario. The boundary between these two sections of the province is indicated in Fig. 2. Table 3B clearly shows that in southern Ontario the largest volume of forest growing stock for both conifer and hardwoods, is on private lands. It also shows that, proportionately, private lands in northern Ontario have less coniferous growing stock per unit area than Crown forest lands; while they carry more hardwood growing stock per unit area than Crown lands. The amount of growing stock per unit area is essentially the same for both Crown and private lands in the province. Quality hardwood species, however, are found primarily in southern Ontario.

TABLE 3

DISTRIBUTION OF AREA AND GROWING STOCK
ON PRIVATE AND CROWN LANDS

TABLE 3A

DISTRIBUTION OF AREA

	Crown Forest Area in Square Kilometres (Acres)	Private Forest Area in Square Kilometres (Acres)	Private Forest Percentage of Total Area
Northern Ontario	286 918 (70 844 000)	24 932 (6 156 000)	8.0
Southern Ontario	6 427 (1 587 000)	17 034 (4 206 000)	72.6
	293 345* (72 431 000)	41 966 (10 362 000)	12.5

* This figure excludes the 9 089 248 ha (22 460 000 acres) of Crown productive forest land that is considered only potentially exploitable.

TABLE 3B

DISTRIBUTION OF VOLUME

	Crown Forest Growing Stock Volume in Cubic Metres (Cunits)	Private Forest Growing Stock Volume in Cubic Metres (Cunits)	Private Forest Percentage of Total Volume
Conifer			
Northern Ontario	1 906 643 943 (673 249 980)	116 595 337 (41 170 670)	5.8
Southern Ontario	17 142 889 (6 053 280)	37 073 485 (13 090 920)	68.4
Total volume of conifer growing stock	1 923 786 832 (679 303 260)	153 668 822 (54 261 590)	7.4
Hardwoods			
Northern Ontario	1 228 578 665 (433 820 150)	155 253 610 (54 821 190)	11.2
Southern Ontario	43 234 303 (15 266 350)	133 577 935 (47 167 350)	75.5
Total volume of hardwood growing stock	1 271 812 968 (449 086 500)	288 831 545 (101 988 540)	18.5
Total volume of growing stock	3 195 599 800 (1 128 389 760)	442 500 367 (156 250 130)	12.2
Growing Stock	109.2 m^3/ha (15.6 cunits/acre)	105.6 m^3/ha (15.1 cunits/acre)	

The annual allowable cut or AAC [Table 4] is the amount of wood, or area of forest, that may be cut. The calculation of this value involves factors relating to objectives of management and the nature of the forest such as rotation ages, regeneration success, and age class distribution of the existing forest.

TABLE 4

ANNUAL ALLOWABLE CUTS FOR CONIFER AND HARDWOOD GROWING STOCKS

	AAC for Private Lands in Cubic Metres (Cunits)	AAC for Private Lands as a Percentage of Crown Forest AAC
Conifer	3 025 227 (1 068 230)	8.4
Hardwood	8 508 064 (3 004 260)	28.7
Total AAC	11 533 291 (4 072 490)	17.5

These AAC data again reflect the relatively greater proportion of hardwood growing stock carried by private lands.

In northern Ontario, there are several areas where major forest industries are located, and where there are concentrations of accessible privately owned productive forest land. The ownership pattern has usually resulted from agricultural settlement that was encouraged and subsidized during the first part of this century. Table 5 lists estimated areas of privately owned productive forest lands for three northern Ontario areas.

TABLE 5

THREE NORTHERN ONTARIO AREAS OF PRIVATELY OWNED PRODUCTIVE FOREST LANDS

Location	Area in Square Kilometres (Acres)
Fort Frances-Rainy River	1 068 (263 670)
Thunder Bay District -including municipalities and Loch Lomond watershed	2 587 (638 654)
Northern Region Districts -Kirkland Lake -Timmins -Cochrane -Kapuskasing -Hearst	4 474 (1 104 787)
Total forest lands	8 129 (2 007 111)

Thus, approximately 8100 km^2 (2 million acres) of privately owned productive forest land exist in relatively close proximity to many mills. The predominant tree species growing on these lands is poplar. Most conifers of any commercial value have long since been removed.

These 8100 km^2 (2 million acres) comprise a significant portion of the total private productive forest land in northern Ontario. The level of management and the support for forest management are, however, minimal or in most instances negligible. In addition, approximately 9720 km^2 (2.4 million acres) of land in northern Ontario are owned by five companies, four of which are forest industries. [A brief review of these companies will follow.] The balance of private land forests in northern Ontario comprises areas of varying size classes ranging from a few to many thousands of square kilometres.

Areas of woodlands on private lands, as determined by the 1981 Rural Landowner Survey, varied considerably, but 75% were between 4 ha and 81 ha (10 and 199 acres) [Fig. 3]. The frequency distribution for northern Ontario properties shows nearly 60% in the 20 ha to 81 ha (50 to 199 acres) range. The distribution of size classes for southern Ontario was similar to those for the province as a whole.

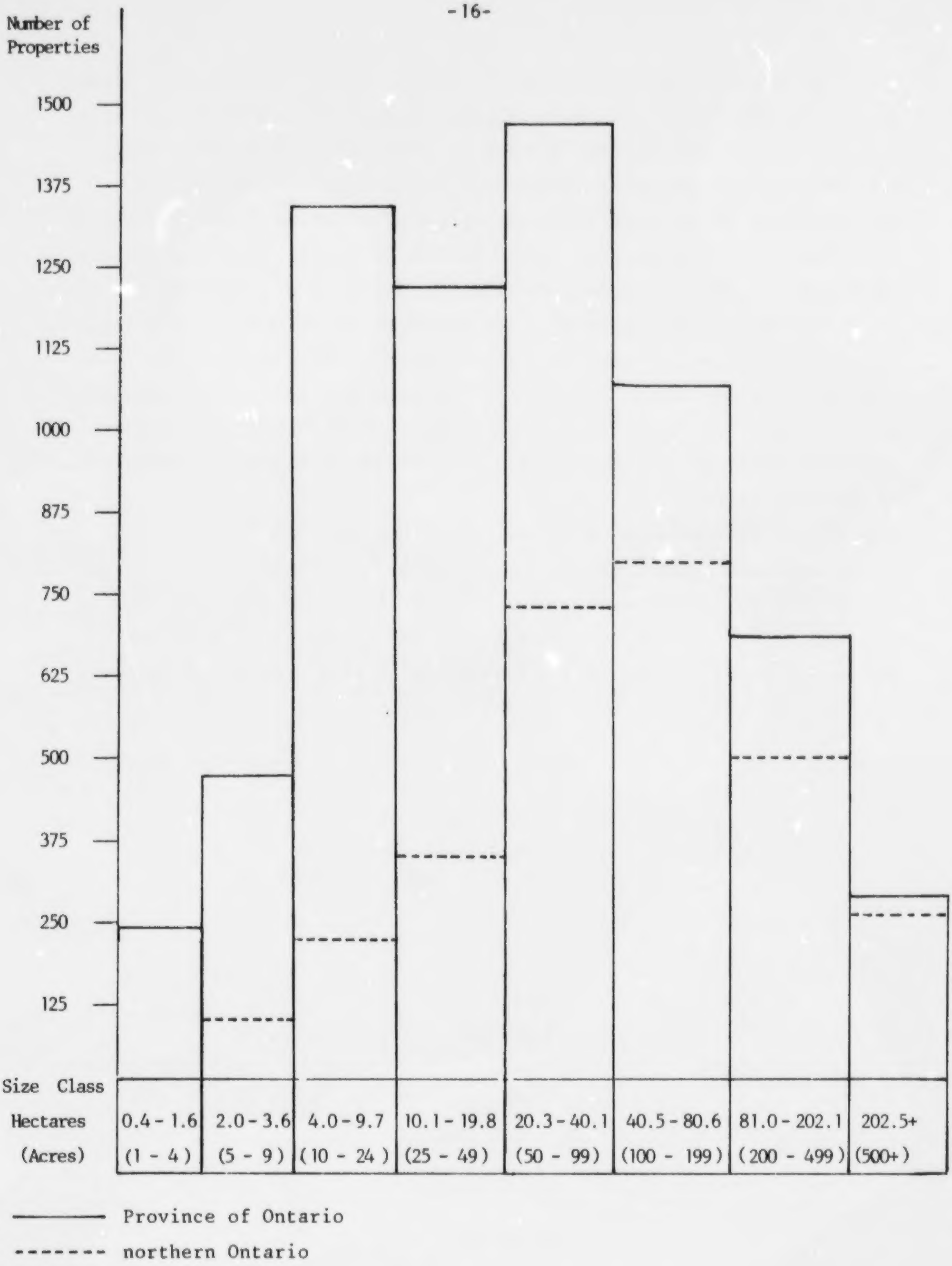

Figure 3. Frequency distribution of woodlands on private lands

The distribution of ownership for areas of 20 ha (50 acres) and greater is summarized in Table 6. About 60% of the owners in both northern and southern Ontario own 20 ha to 81 ha (50 to 199 acres). The percentage of ownership of properties larger than 122 ha (300 acres) and, in particular, more than 810 ha (2000 acres) is considerably greater in northern than southern Ontario.

TABLE 6

DISTRIBUTION OF OWNERSHIP
BY LAND AREA

Area Size Class in Hectares (Acres)	Per cent in Northern Ontario	Per cent in Southern Ontario	Per cent in Ontario
20-40 (50-99)	21.9	26.5	25.2
41-80 (100-199)	36.3	37.0	36.8
81-121 (200-299)	10.5	17.4	15.5
122-202 (300-499)	15.9	12.2	13.2
203-405 (500-999)	10.2	5.3	6.6
406-810 (1000-1999)	2.4	1.2	1.5
810+ (2000+)	2.8	0.5	1.1

As might be expected, the distribution of private lands, shown in Table 7, is uneven within the province. Sixty-two per cent of all private landowners are located in the three southern Ontario MNR Regions—Eastern, Central, and Southwestern. In northern Ontario, virtually half of all the private landowners are located in the Northeastern Region.

TABLE 7

DISTRIBUTION OF PRIVATE LANDOWNERS
BY MNR REGION

MNR Region	Northern Ontario	Southern Ontario	Ontario
Northwestern	16.0	-	4.4
North Central	13.5	-	3.7
Northern	21.2	-	5.8
Northeastern	49.4	-	13.5
Algonquin	-	14.8	10.7
Eastern	-	23.1	16.8
Central	-	24.8	18.0
Southwestern	-	37.3	27.1
	100.0	100.0	100.0

The Owners

Basically there are three classes of private ownership in Ontario's private land forest programs: individual, corporate, and municipal or other public non-Crown ownership. Only the first two are discussed in this section; the third will be dealt with under the section Agreement Forests in Ontario.

An estimated 198 140 landowners in Ontario own properties of 20 ha or more (50 acres or more) in extent. Of these, some 183 410 [92.6%] are individuals or own the land in some form of non-corporate partnership. The majority [153 770 or 84%] of these individual owners have some woodland on their property.

Most of the landowners [94.6%] reside in Ontario, and 69% reside on or near the property they own. This proportion is even greater [82%] if only those landowners with some woodland on their property are included.

Some 90% of all properties have been acquired since 1940 and more than half [63%] since 1960. In terms of occupation, the single largest group of owners are farmers [45%] and as might be expected, this proportion is greater in southern Ontario than in northern Ontario. The second largest group of landowners [12.8%], as shown in Table 8, are those who are retired.

TABLE 8

OWNERSHIP BY OCCUPATION

Occupation	Owners with Woodlands	Percentage of Owners with Woodlands	Owners without Woodlands	Total Ownership	Percentage of Total Ownership
Farmer	64 540	78.9	17 230	81 770	44.6
Labourer	12 080	87.7	1 700	13 780	7.5
Clerk	2 230	85.4	380	2 610	1.4
Tradesman	15 000	90.1	1 650	16 650	9.1
Businessman	10 860	88.4	1 420	12 280	6.7
Professional	16 040	90.2	1 750	17 790	9.7
Housekeeper	6 730	82.6	1 420	8 150	4.4
Retired	20 020	85.6	3 380	23 400	12.8
Other	6 270	89.8	710	6 980	3.8
Total owners	153 770	83.8	29 640	183 410	100.0

The two principal reasons for which owners purchase land are for farming and as a location for permanent residence. Only a small proportion [2.9%] of owners purchase land for the satisfaction of owning woodland, and an even smaller proportion [1.2%] purchase it for the purpose of commercial timber production.

It appears that for many landowners, woodland on their property is incidental. Forty-four per cent of owners stated that the reason for having woodland or forest plantations was that it had always been a part of the property. Only 3% indicated they had any interest in selling timber. Yet, when asked if any forest products had been sold from their property, a surprising 28% said yes. Of those who sold wood, the largest single product was pulpwood in northern Ontario and sawlogs in southern Ontario. Thirty-seven per cent of the owners in the survey reported that they sold fuelwood from their land. Of the products sold on a provincial basis, the percentage was similar for both northern and southern Ontario.

What emerges from the responses is an indication that the woodlands on a property are viewed both passively and as a desirable component that comes with the land which, periodically, may bring the owner some revenue either directly, through the sale of forest products, or indirectly when the owner cuts wood for his own use. Thirty-two per cent indicated that the reason they did not sell forest products was because they cut wood for their own use.

The majority of owners [44%] who carried out forest management activities stated that they did so to provide wood for their own use. Only 6% [9% in northern Ontario] indicated that they undertook some form of forest management in order to provide wood for sale. There appears to be an inconsistency between what owners state as their intent, concerning the management or disposition of timber on their lands, and what in fact actually occurs if a market is available for the sale of forest products.

The only complete record that MNR has of wood produced from private lands and processed in Ontario comes from the annual mill license returns. Production has ranged between 10% and 26% over the years, as show in Table 9, and constitutes a slightly greater proportion of wood used than is represented by the private land forest area of the total provincial productive forest base [Table 3]. These amounts must be regarded as very conservative and for the most part, do not include non-industrial wood used by the owners or wood sold for fuelwood.

TABLE 9

ONTARIO INDUSTRIAL ROUNDWOOD RECEIPTS

[Data from MNR mill license returns]

Year	Crown Land in Millions of Cubic Metres MMft^3	Patented Land in Millions of Cubic Metres MMft^3	Patented Land Receipts as Percentage of Total	Total* Receipts
1963	10.11 (357)	2.38 (84)	19	12.49 (441)
1964	9.85 (348)	2.69 (95)	21	12.54 (443)
1965	9.26 (327)	3.31 (117)	26	12.57 (444)
1966	10.96 (387)	3.00 (106)	22	13.96 (493)
1967	11.07 (391)	2.83 (100)	20	13.90 (491)
1968	11.86 (419)	3.28 (116)	22	15.14 (535)
1969	12.20 (431)	3.23 (114)	21	15.43 (545)
1970	12.43 (439)	2.86 (101)	19	15.29 (540)
1971	12.15 (429)	3.14 (111)	21	15.29 (540)
1972	12.46 (440)	2.94 (104)	19	15.40 (544)
1973	14.67 (518)	3.09 (109)	17	17.76 (627)
1974	15.63 (552)	3.96 (140)	20	19.59 (692)
1975	12.97 (458)	1.92 (68)	13	14.89 (526)
1976	13.70 (484)	2.10 (74)	13	15.80 (558)
1977	16.79 (593)	1.90 (67)	10	18.69 (660)
1978	18.38 (649)	2.72 (96)	13	21.10 (745)
1979	18.35 (648)	4.12 (145)	17	22.47 (783)
1980	19.31 (682)	3.45 (122)	15	22.76 (805)

*Excluding imports

According to the 1981 Fuelwood Consumption in Ontario Survey, slightly less than 2 832 000 m^3 (1 million cunits) of fuelwood was burned in 1980. Fifty-three per cent of the householders burning wood obtained it from their own woodlands, while 29% came from other private lands and 8% from Ministry administered Crown and agreement forest lands. The balance of about 10% was obtained from retailers, the origin of the wood being either from private or Crown lands. In northern Ontario, the amount of fuelwood coming from Ministry sources was much higher [37%] compared with only 4.6% in southern Ontario. While the number of woodlot owners sampled was small in relation to the overall survey, there was a strong indication that the cutting of fuelwood has relatively minor professional or technical forestry input. For example, the proportion of owners who had contact with a Ministry extension forester ranged from 2.9% in the Northwestern Region to 29.2% in the Central Region. Contacts in the four northern regions were all less than 10%, whereas in the southern regions they ranged between 15.6% and 29.2%. Only 3.5% had any cutting done under a Woodlands Improvement Act agreement.

The survey shows that most of the fuelwood is being harvested from private woodlands. Between 1971 and 1981, the consumption of fuelwood in Ontario has been estimated to have increased from approximately 920 400 m^3 to 2 707 392 m^3 (325 000 to 956 000 cunits).

The present rate of consumption from private lands of 2 188 552 m^3 (772 794 cunits) is approximately equivalent to the mean annual growth of hardwoods on 10 125 km^2 (2.5 million acres) of forest. In other words, if a gross total volume of 175 m^3/ha (25 cunits/acre) for mature hardwoods is assumed, the present rate of fuelwood consumption is equivalent to clearcutting about 12 555 ha (31 000 acres) of such forest annually.

Although owners of properties greater than 810 ha (2000 acres) in extent constitute only a small proportion of owners, particularly in northern Ontario, they own a large proportion of the total area of private forest lands. Because of the significance of these forest lands, for commercial timber production, a brief account is given on five of the largest holdings, which together comprise 9720 km^2 (2.4 million acres) or 52% of private forest lands in northern Ontario.

Algoma Central Railway [ACR]

The construction of railways was a key factor in the development of Ontario and Canada. One of the Government's major incentives for promoting railways was to provide large land grants. Grants of land to the Algoma Central Railway Company,[4] in 1900, were conditional upon the company constructing not only a railway, but developing industrial complexes, a shipping fleet, and a settlement, which included the building of stations, town plots, schools and town halls, as well as the recruiting immigrants in Great Britain. Virtually all conditions were met by the company with the exception of the full-scale settlement which, largely because of the nature of the lands, was not able to be fulfilled.

By 1917, over 8100 km^2 (2 million acres) had been granted to ACR, but financial difficulties resulted in the sale of some 1417.5 km^2 (350 000 acres) to the Newaygo Timber Company in 1924. Between then and World War II, the company returned about half of the remaining lands to the Government of Ontario and now holds approximately 3442.5 km^2 (850 000 acres) of forest land. Little development of these forest lands took place except for timber harvesting.

The Abitibi Paper Company, which held a 99-year lease, carried out the first forest inventory on these lands in 1949. In 1966, a forest resources inventory was undertaken by the Ministry and resulted in a detailed updating of the Abitibi inventory. The rights to pine, orginally retained by the Crown, were transferred to Algoma Central Railway in 1969. In return, the Crown obtained the faunal rights about the same time the 99-year agreement with Abitibi was cancelled. These arrangements were a stabilizing influence and the company worked toward a policy and land-use plan for their lands. This was achieved in 1978 with both the "Policy Guidelines for the Future Development of the Land Grant Lands of the Algoma Central Railway", and an associated land-use plan when they were submitted to the Ministry of Housing and received approval. Basically, the goals of the plan are to fully utilize the lands for the production of wood and minerals; to protect the natural environment in the public interest; and to enter into a long-term program of tourist and recreational development.

Algoma Central Railway has no wood conversion plants and does not undertake any commercial logging. Logging is done by the Newaygo Timber Company in the 20 northern townships, under a ten-year contract dating from 1974. G.W. Martin Logging Limited operates in the 18 southern townships, under a 25-year contract initiated in 1968. An allowable cut by volume has been determined and the contracts require a minimum cut by species or groups of species.

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4. In 1901, the name was changed to the Algoma Central and Hudson Bay Railway Company; the present name was adopted in 1965.

Each contractor must submit five-year operating plans and annual plans. These plans are subject to ACR approval, particularly with reference to road location and constraints on cutting in relation to shoreline and recreational uses. Diameter and species limits may be set for specific areas under the plans, but there are no blanket regulations. All road construction and maintenance are the responsibility of the contractor, and roads are open to the public. The regeneration surveys and practices are done by ACR. Approximately 1215 ha (3000 acres) are cutover annually, many of them being partial cutovers in mixed wood forests. In a 31-year period (1949 to 1980) the following volumes have been cut from ACR lands.

Veneer	hardwoods	205 202 m^3	(39 135 MBM)
Sawlogs	hardwoods	154 965 m^3	(29 554 MBM)
	softwoods	235 258 m^3	(44 867 MBM)
Pulp and sawlogs	hardwoods	10 067 m^3	(2 777 cds)
	softwoods	2 107 996 m^3	(581 516 cds)

These are equivalent to 317 926 m^3 (112 262 cunits) of hardwoods and 1 637 496 m^3 (578 212 cunits) of softwoods, or an annual average of 10 255 m^3 (3621 cunits) of hardwoods and 52 822 m^3 (18 652 cunits) of softwoods. In fact, the volume of wood cut annually has varied, often tenfold or more from year to year. Stumpage charges are similar to those set forth in the regulation of the Crown Timber Act.

Land for private recreational use is leased on an annual basis and for commercial use on a five year basis. The location and type of lease are governed by the company's land-use plan.

Abitibi-Price Inc.

The company owns 261 792 ha (646 400 acres) in northern Ontario. Approximately 58 320 ha (144 000 acres) are situated along the Mattagami River south of Smooth Rock Falls; the balance is in a series of blocks situated along the Trans-Canada Highway, northwest of Thunder Bay. In addition to timber rights, the company owns the mineral rights; but faunal rights to the land belong to the Crown.

For the most part, the mature timber in the Smooth Rock Falls area has been cut, and the forests in northwestern Ontario are being cut at the rate of 226 560 m^3 to 254 880 m^3 (80 000 to 90 000 cunits) of wood per year. The timber is sold to contractors and the stumpage price is the same as for similar timber on the nearby Crown lands under license to the company.

Abitibi's primary objectives are to triple the yield of wood fibre on the productive forest lands; and to locate and develop mineral resources on the property to an extent that is economically feasible.

In 1975, the company embarked upon a program of forest management for its freehold lands in which approximately 2430 ha (6000 acres) are cut over each year. By 1980 the first million trees had been planted, and in 1981 another 700 000 trees were planted in northwestern Ontario. It is planned that by 1985 the annual rate of planting will be four million trees. All planting stock is produced privately at the company's expense.

The company does not presently have any plans for recreational development, but there is free public access to the lands.

Domtar Inc.

Domtar owns 167 548 ha (413 700 acres) of land in which 145 678 ha (359 700 acres) are in the Hearst District, Northern Region; 20 088 ha (49 600 acres) are in the Gilmour Block in eastern Ontario; and some 1782 ha (4400 acres) are in the general vicinity of Cornwall. The company's primary objective on its freehold lands is wood production; secondary objectives include recreation and hunting.

Hearst Property:

The property at Hearst was acquired in 1976 to provide fibre for the company's mill at Red Rock. Domtar contracts cutting to local sawmills who agree to provide chips on a ton-for-ton basis. Stumpage rates are similar to the Crown's but with additions for administration and regeneration. The base rates are indexed as are the Crown's. Between 1458 ha (3600 acres) and 1863 ha (4600 acres) are cut each year and various silvicultural regeneration practices are undertaken. To date, seedlings for planting have been obtained from MNR nurseries, and Domtar has collected cones for seed extraction by the Ministry. Normal Ministry charges for both seed extraction and seedlings have applied. Although mineral and faunal rights are not held by the company, Domtar does control access to its lands. The company has held discussions with MNR staff on the possibility of developing a moose management plan and intends to develop a multiple-use plan for the area.

Gilmour Property:

This property is in the MNR districts of Bancroft and Tweed. The forests are considered a backup supply for Domtar's Trenton mill and, in extreme necessity, for Cornwall. The Trenton mill obtains approximately half of its wood supply from the Crown forest lands in the same general area as the company's property. Presently a 20-year management plan and a 5-year operating plan are being developed.

Domtar leases recreational rights to hunt clubs at a rate equivalent to the property taxes. The Gilmour property also qualifies for the managed forest tax rebate.

Cornwall Private Lands and Extension:

Since 1975, Domtar has had an agreement under the Forestry Act whereby the Ministry of Natural Resources will manage company owned lands of up to 4050 ha (10 000 acres) for forestry purposes. This agreement is primarily for the production of hybrid poplar close to Cornwall.

The company is the only one in Ontario to have a forestry extension program with private landowners, and presently employs three staff, including a professional forester for this program. Basically, Domtar prepares management plans for an owner, marks trees for cutting, and provides marketing assistance that includes a referral service to contractors plus supervision of the actual cutting.

In late 1981, through an arrangement with the Ministry of Natural Resources and funded by the Board of Industrial Leadership Development [BILD], Domtar was reimbursed for costs of preparation of plans and for all silvicultural practices undertaken on a private landowner's property within a 32 km (20 miles) radius of Cornwall. Within the Cornwall District, the MNR will reimburse Domtar only for approved stand improvement work on private lands. For the portion of Domtar's program funded by the Ministry, the company must have a 10-year lease with each owner. On lands within a 32 km (20 miles) radius of Cornwall, the main production is hybrid poplar.

Extension services that are provided by Domtar, and currently limited to within 80 km (50 miles) of Cornwall, will soon be extended to Trenton. The company will also expand its services to landowners, outside of the program supported by MNR.

Newaygo Timber Company Limited

The company owns 145 050 ha (358 149 acres) of land, mainly between Hearst and Franz along the Algoma Central Railway. Since 1974, it has operated a sawmill at Mead, south of Hearst, and uses approximately 317 184 m^3 (112 000 cunits) of wood, each year to produce 235 955 m^3 to 262 172 m^3 (45 to 50 MBM) of lumber. About 192 576 m^3 (68 000 cunits) of this wood comes from Newaygo lands. Annually, some 2835 ha (7000 acres) of forest are cutovers and often consist of partial cuttings in mixed wood stands. Newaygo has owned its lands since 1924, and an inventory of the forests was recently completed.

It is estimated that there is sufficient merchantable timber existing on its lands to operate the Mead mill for nine years, based on its present rate of consumption. Two factors have brought this about: an age-class imbalance resulting from the over-cutting of mature merchantable forests and the lack of a forest regeneration program. Unlike some large holdings, the rights to pine on these lands are still retained by the Crown.

Although Newaygo has done site preparation and planting, no operational regeneration or silviculture has been practiced. Yet it is recognized that an ongoing forest renewal and management program is necessary if forest productivity is to be maintained.

Since the company's establishment, a large portion of its lands have been accessed by roads.

Spruce Falls Power and Paper Company Limited [SFP&PC]

The company owns 76 545 ha (189 000 acres) of land, adjacent to the western boundary of the Gorden Cosens Forest—an area of Crown land held by SFP&PC under an MNR forest management agreement. The company's objective for these lands is to maximize the yield of wood fibre. Substantial logging did not start until 1963. Regeneration and tending on a major scale was not practiced until 1973.

The current annual rate of cutting is approximately 240 720 m^3 (85 000 cunits) on 2430 ha (6000 acres) of land. As of 1981, over four million trees have been planted on 4050 ha (10 000 acres) and about 8100 ha (20 000 acres) have been tended.

Road access to the areas is essentially complete. Travel by the public on company lands is controlled.

In summary, although private land forests constitute some 10% of the total productive forest base, they provide a disproportionately larger amount of industrial wood. The total wood flow from private lands is unknown. However it is highly probable that the annual cut is greater than the annual allowable cut (11 328 000 m^3 or 4 000 000 cunits) calculated in 1963. The recent survey on fuelwood consumption shows an annual volume of nearly 2 832 000 m^3 (1 000 000 cunits), most of which is harvested on privately owned lands and is not recorded by the Ministry. Other private uses, not processed or recorded by mill license returns, are unquantified.

Most private individual ownership consists of woodlands that range from 4 ha to 81 ha (10 to 199 acres) in extent. While ownership holdings in northern Ontario are somewhat larger, two key features emerge. First, about 8100 km^2 (2 million acres) of individually owned land in the north is located in developed areas such as Fort Frances-Rainy River, Thunder Bay and the clay belt, where communitites and access roads are already in place. Second, five companies own more than 9720 km^2 (2.4 million acres) of the forest lands which contribute to the province's industrial wood supply. Only since the mid-1970s have these lands received even a modicum of forest management.

For the majority of individual owners, the presence of woodlands on their property is incidental. Nevertheless, a very small proportion of owners expressed an interest in selling timber, and nearly 29% did so when they had an opportunity. The existence of a market for timber seems to be a considerable stimulus.

The single largest individual owner group of private forest lands is farmers.

III. PRIVATE LAND FORESTRY PROGRAMS IN ONTARIO

Nursery Stock Production

Nursery stock has been available to landowners since 1905. Initially, trees were supplied free to landowners for planting areas up to 0.8 ha (2 acres). Later, landowners wanting more than 3500 trees were required to pay $4 per thousand for any additional trees.

In 1952, the price of nursery stock was increased to $10 per thousand. Except for Scots pine, the price remained the same until April, 1981 when it was raised to $25 per thousand, plus a handling charge of $10 per order. A minimum order of nursery stock is now limited to 100 trees, and the purchaser must own at least 2 ha (5 acres) of land exclusive of any part occupied by structures.

The cost of producing nursery stock varies with nursery, species, and age class. In 1981, the average cost for stock used in private land planting was $110 per thousand trees.

Table 10 gives the annual amount of stock distributed to private landowners between 1905 and 1981, except for those whose lands were under agreement with the Ministry. Since the late 1920s, the number has varied from 6 million to 18 million trees; and since 1949, with the exception of 1962, 1963, 1966 and 1974-78 the annual amount has been more than 10 million.

There are 10 MNR nurseries in Ontario. The four located in southern Ontario supply the bulk of the stock for private land planting. In northern Ontario, Swastika, Thunder Bay, and Dryden nurseries also produce private land stock, but the amount is small when compared to stock produced for Crown lands.

Prior to the mid-1950s, the nursery stock planted on private lands took most of the Ministry's production. Then the amount declined, until by 1981 it constituted 32% of the nurseries' overall production. After the inception of the Woodlands Improvement Program in 1966, an additional 122 748 113 trees were planted on private lands. Therefore, since 1905 MNR nurseries have supplied 713 880 854 trees and shrubs to private landowners of which 316 069 534 [44%] have been provided since 1966. The total nursery stock production for Crown and private lands between 1905 and 1981 was 1.8 billion trees.

TABLE 10

PRIVATE LAND TREE DISTRIBUTION 1905-81*

Year	Trees Distributed	Year	Trees Distributed
1905	10 000	1945	7 056 936
1906	80 000	1946	9 215 124
1907	200 000	1947	6 895 252
1908	375 000	1948	7 732 554
1909	380 000	1949	11 089 554
1910	200 000	1950	12 669 636
1911	350 000	1951	12 353 019
1912	350 000	1952	13 167 286
1913	400 000	1953	14 188 800
1914	400 000	1954	14 559 040
1915	325 000	1955	16 254 270
1916	130 000	1956	14 421 330
1917	100 000	1957	12 523 099
1918	100 000	1958	12 986 865
1919	40 000	1959	13 809 125
1920	130 000	1960	13 708 050
1921	291 769	1961	11 505 775
1922	327 732	1962	9 597 300
1923	699 618	1963	9 016 400
1924	1 954 671	1964	10 791 980
1925	5 277 237	1965	11 312 900
1926	2 790 549	1966	9 542 325
1927	4 176 205	1967	10 219 517
1928	7 777 600	1968	11 956 165
1929	6 549 642	1969	14 246 964
1930	5 822 650	1970	16 339 867
1931	5 220 946	1971	15 666 207
1932	8 352 939	1972	17 907 113
1933	7 817 312	1973	10 201 430
1934	6 416 030	1974	9 886 524
1935	7 444 897	1975	8 593 424
1936	7 318 783	1976	7 647 726
1937	8 360 067	1977	7 634 143
1938	8 506 019	1978	9 405 081
1939	11 391 462	1979	13 026 690
1940	11 311 157	1980	14 948 635
1941	8 360 319	1981	16 099 610
1942	8 059 219		
1943	7 334 194		
1944	7 826 008	Total trees distributed	591 132 741

* The figures do not include orders for lands under the Agreement Forests or Woodlands Improvement Programs

Certain facts emerge when the nursery production of trees and shrubs for private land planting is reviewed. First, the costs of production are considerably more than the charges made to landowners. Second, although a handling charge of $10 per order was instituted in 1981, this only defrays part of the actual handling costs, particularly where there is a large number of small orders. In 1981, for example, of the 7996 private land nursery stock orders—excluding those for W.I.A. agreements—81% were for orders of less than 2000 trees, while 5.8% of the orders accounted for 52% of the trees shipped.

When ordering private land stock, there is no requirement for the owner to have a planting plan or to carry out planting or tending properly. Although MNR staff may inspect the planted areas, this is not routinely done. Where agreement forest lands are managed by the Ministry, or private lands managed under the Woodlands Improvement Program, planting and planted areas must conform to plans and are inspected by MNR staff.

Woodlands Improvement Program

The W.I.A. legislation and implementation program developed in response to an increasing recognition by MNR field staff that large areas of abandoned submarginal agricultural lands were suitable for reforestation. In addition, it was noted that extensive areas of woodlands required precommercial thinnings. In both situations, there was little incentive for the landowner to carry out the work on a sizable scale since no short-term income could be realized from the operations.

In 1962, the Honourable J.W. Spooner, Minister of Lands and Forests, stated, "I believe that for private land forest policies we must choose to lead the way by developing policies that are suitable for our people and our conditions giving them strong leadership ... lands are idle that should be contributing to the economy of Ontario. We must try to solve this problem."

At the same time, it was estimated that in southern Ontario there were 6075 km^2 (1.5 million acres) of land requiring reforestation—revised to 8100 km^2 (2 million acres) in 1965—and a further 23 490 km^2 (5.8 million acres) of existing woodlands, most of which needed improvement.

Basic to the concern for increased reforestation and woodlot improvement was the recognition that professional and technical advice must be provided in a regular and continuing manner; that the owner must be given an incentive; and that the property or woodlot must be committed to sound forest management.

In 1964 and 1965, a trial scheme whereby private landowners were given assistance in tree planting took place in four townships in Simcoe County. The result was a sevenfold increase in planting over previous annual levels. This was taken as evidence that owners would reforest to a much greater degree if direct assistance was available. Thus, in 1966 the Woodlands Improvement Act came into being. Initially, it applied only to southern Ontario, but in 1970 the program was expanded nominally to include private land in northern Ontario.

This legislation allows the Minister of Natural Resources to enter into an agreement with a landowner in order to provide assistance in reforestation and stand improvement. Under a woodlands improvement agreement, MNR staff prepare a work plan, estimate costs of prescribed forestry practices, and either provide or pay for the work to be undertaken. The landowner commits the land to forestry for 15 years, agrees to give adequate protection, and purchases the trees necessary for planting. The agreements are not registered against title to the property, hence there is no lien resulting from the signing of an agreement. An agreement holder is required to notify the Ministry if the property is to be sold; the new owner can assume the agreement upon taking title to the property. In the past, the area under agreement to an owner has automatically qualified for the managed forest tax reduction.

Table 11, a 15-year summary of the Woodlands Improvement Program, shows that of the total area under agreement, about one-third consists of lands that have been reforested. Of the areas treated, about half have been planted and the rest have received stand improvement practices. This represents only 6.4% of the total of 8100 km^2 (2 million acres) of land in southern Ontario intially determined as the target land base for reforestation in 1965.

TABLE 11

ACCOMPLISHMENTS UNDER THE WOODLANDS IMPROVEMENT PROGRAM 1966-81

Number of agreements	8597
Area under agreement	147 816 ha (364 978 acres)
Area planted	51 772 ha (127 833 acres)
Number of trees planted	113 464 313
Average number of trees planted per hectare	2192/ha (887/acre)
Area of woodlands receiving improvement practices	50 919 ha (125 727 acres)

The 509.19 km^2 (125 727 acres) of woodlands which have received improvement practices are only about 2% of the orginal 23 490 km^2 (5.8 million acres) that were deemed suitable for improvement in 1965.

TABLE 12

SUMMARY OF ANNUAL ACCOMPLISHMENTS UNDER THE WOODLANDS IMPROVEMENT PROGRAM TO MARCH 31, 1981

Fiscal Year	Agmts Signed	Areas* Placed Under Agreement	Average Size of Agmt. Area*	Areas* Reforested	Trees Planted	Areas* Improved	Total Areas* of Accomplishment
1966-67	181	3 564 (8 800)	20 (49)	85 (211)	1 300 000§	158 (390)	243 (601)
1967-68	382	8 788 (21 700)	23 (57)	1 232 (3 043)	5 500 000	688 (1 700)	1 921 (4 743)
1968-69	452	14 661 (36 200)	32 (80)	2 916 (7 200)	7 100 000	2 592 (6 400)	5 508 (13 600)
1969-70	478	12 596 (31 100)	26 (65)	3 686 (9 100)	7 000 000	2 470 (6 100)	6 156 (15 200)
1970-71	395	9 436 (23 300)	24 (59)	3 483 (8 600)	6 400 000	2 714 (6 700)	6 196 (15 300)
1971-72	466	7 250 (17 900)	15 (38)	3 848 (9 500)	8 000 000	2 390 (5 900)	6 237 (15 400)
1972-73	482	7 330 (18 100)	15 (38)	3 928 (9 700)	8 700 000	3 402 (8 400)	7 330 (18 100)
1973-74	614	4 941 (12 200)	8 (20)	4 090 (10 100)	8 500 000	2 106 (5 200)	6 196 (15 300)
1974-75	461	6 966 (17 200)	15 (37)	4 293 (10 600)	7 950 000	2 430 (6 000)	6 723 (16 600)
1975-76	729	11 218 (27 700)	15 (38)	3 564 (8 800)	10 700 000	4 496 (11 100)	8 060 (19 900)
1976-77	716	9 639 (23 800)	13 (33)	4 252 (10 500)	8 200 000	5 508 (13 600)	9 760 (24 100)
1977-78	843	15 239 (37 626)	18 (45)	4 057 (10 018)	7 405 150	6 157 (15 203)	10 215 (25 221)
1978-79	777	15 545 (38 383)	20 (49)	4 402 (10 869)	8 086 049	6 166 (15 226)	10 568 (26 095)
1979-80	819	9 811 (24 224)	12 (30)	4 052 (10 007)	9 287 870	5 404 (13 344)	9 457 (23 351)
1980-81	802	10 832 (26 745)	13 (33)	3 882 (9 585)	9 335 244	4 238 (10 464)	8 120 (20 049)
Total	8597	147 816 (364 978)	18 (45)	51 770 (127 833)	113 464 313	50 919 (125 727)	102 690 (253 560)

* All areas are measured in hectares (acres).

§ This figure includes trees planted in 1964 and 1965 trials.

The size of areas that are considered for W.I.A. agreements varies from 2 ha to 810 ha (5 to 2000 acres). In some MNR districts, an arbitrary lower limit has been set at 4 ha (10 acres). This is in response to the fact that there is a greater demand for W.I.A. assistance than can be provided by MNR staff, and small properties make assistance less cost effective. Table 13 shows that when the North Central and Northern Regions—where there are only a few W.I.A. agreements—and the Algonquin Region are excluded, the smaller-sized properties constitute 18% to 24% of the total number of agreements. The paucity of agreements in the three northern Ontario regions is clearly indicated. The total area under W.I.A. agreements is 2850 ha (7036 acres).

TABLE 13

W.I.A. AGREEMENTS BY MNR REGION
TO JULY, 1981

MNR Region	W.I.A. Agreement Areas Less Than 4 Hectares (10 Acres)	Total W.I.A. Agreement Areas	Per cent of Total W.I.A. Agreements Less Than 4 Hectares (10 Acres)
Northwestern	-	-	-
North Central	2	17	11.8
Northern	1	2	50.0
Northeastern	22	101	21.8
Algonquin	88	914	9.6
Eastern	534	2227	24.0
Central	473	2514	18.8
Southwestern	523	2735	19.1
Total	1643	8510	19.3

Owners may have more than one agreement, more than one property, or a property with conditions requiring different forestry practices. For example, one area may be open land that can be reforested, while adjoining it may be a woodlot requiring improvement or tending. MNR staff may suggest that the owner enter into an agreement for reforestation of the open area, and defer an agreement for the remainder for one or more years. This suggestion is usually made in light of the MNR workload. Another situation occurs when an existing woodlot, or portion of one, contains merchantable timber for which a market exists. Ministry staff will then usually suggest that the stand be marked under the Advisory Services Program; and after the timber has been removed, that the owner place the woodlot under a W.I.A. agreement.

The 1981 Ontario Rural Private Landowner Survey documented that for the province as a whole, 45% of landowners of properties 20 ha (50 acres) or larger are farmers. In southern Ontario, the proportion of farmers is 52.6%, and 79% of them have woodlands on their property.

Table 14 lists the number of agreements with farmers in the four southern regions. It can be concluded that the W.I.A. program is, with the exception of the Southwestern Region, providing assistance primarily to owners who are not farmers.

TABLE 14

W.I.A. AGREEMENTS WITH FARMERS IN SOUTHERN ONTARIO

MNR Region	W.I.A. Agreements	W.I.A. Agreements with Farmers	Percentage of Farmers Owning Woodlands*	Percentage of W.I.A. Agreements with Farmers
Algonquin	910	93	19.8	10.2
Eastern	2230	445	42.2	20.0
Central	2503	430	53.6	17.2
Southwestern	2716	1431	71.0	52.7
Total	8359	2399	52.6	28.7

* Ontario Rural Private Landowner Survey [1981]

It is noteworthy that the 1981 landowner survey also showed that in Ontario 51% of the owners were unfamiliar with the Woodlands Improvement Program and would like to know more about it.

The initial W.I.A. agreements signed in 1966 expired in 1981. As of January 1, 1982 a new program was made available to owners with expiring agreements. The owner is offered a Private Land Advisory Services agreement. This is similar to the W.I.A. agreement in that it will include a detailed work plan and the owner will be eligible for the managed forest tax reduction on the managed forest area, subject to certain criteria. However, unlike the W.I.A. agreement—as shown in Table 15—it does not include estimated costs, and an owner is fully responsible for undertaking a work plan at his own expense. The advisory services agreements are also for a period of 15 years, but unlike the W.I.A. agreements, they cannot be assumed by a new owner if the property is sold.

TABLE 15

FEATURES OF THE WOODLANDS IMPROVEMENT AND ADVISORY SERVICES AGREEMENTS

Eligible size of area:	Woodlands Improvement Agreement	Advisory Services Agreement
Minimum —	2 ha (5 acres)	2 ha (5 acres)
Maximum —	810 ha (2000 acres)	810 ha (2000 acres)
Owner —	must be a first-time client for each area	may be a first-time client, or an owner whose W.I.A. agreement has expired
Period of agreement —	15 years	15 years
Who prepares work plan —	MNR staff	MNR staff
Estimated costs —	included	not included
Who provides or pays for work done under agreement —	MNR	owner
Who purchases planting stock —	owner	owner
If property is sold, can new owner assume agreement —	yes	no

An owner requesting an agreement for the first time may opt for an advisory services instead of a W.I.A. agreement. Also, an owner with an expiring W.I.A. agreement may enter into a new one for a new area. The Woodlands Improvement Program has been successful in initiating forest management on private lands mainly in southern Ontario. Whether the new advisory services agreement succeeds in maintaining that momentum remains to be seen.

Advisory Services Program [Forestry Extension]

The Ministry of Natural Resources and its predecessors have provided advice and assistance, in one form or another, to private landowners and others since the early 1900s.

One function has been the answering of queries from the public concerning MNR forestry programs, pest control, or other factors relating to trees and woodlands. This service, although valuable and necessary in bringing Ministry staff into contact with the public, is time-consuming and often produces few tangible results relating to improved forestry or forest productivity. In the past six years, the workload relating to enquiries has more than doubled. During 1974-75, there were 40 000 public enquiries, whereas in 1980-81 there were 87 740. The number of field inspections at this time also rose significantly from 5478 to 8068; more than half of which were related to the second function—that of providing on-the-ground advice and assistance to woodlot owners. A landowner can receive significant material benefits as a result of such MNR activity, one of the most important being tree marking. Field staff, upon request, will inspect a woodlot with the owner and determine the owner's objectives for management. They will then inventory the woodlot, mark trees for cutting, and estimate the volume of merchantable timber. The owner will be given the volume estimates together with a suggested stumpage value based on local market conditions. The owner may also receive a sample contract of a type the Ministry considers will not only protect the owner, but will also require that a logging contractor operate in a manner that will not damage or degrade the woodlot in a way that is unacceptable to proper management.

The Ministry usually provides up to four days of free extension services per year to an owner. In 1980-81, a total of 3074 field inspections were made, and as a result 133 104 m^3 (47 000 cunits) of timber, 70 016 m^3 (24 723 cunits) of pulpwood, and 78 625 m^3 (27 763 cunits) of fuelwood were marked. Table 16 shows the annual volumes of wood marked under the Advisory Services Program since 1977.

TABLE 16

WOOD MARKED UNDER THE ADVISORY SERVICES PROGRAM 1977-81

Year	Sawtimber Marked in Cubic Metres (Cunits)	Pulpwood Marked in Cubic Metres (Cunits)	Fuelwood Marked in Cubic Metres (Cunits)
1977-78	103 877 (36 684)	47 595 (16 806)	
1978-79	112 059 (39 573)	71 924 (25 397)	4 429 (1 564)
1979-80	171 469 (60 553)	75 793 (26 763)	
1980-81	131 923 (46 588)	70 016 (24 723)	78 625 (27 766)

The extent of tree marking varies considerably from region to region as shown in Table 17. In northern Ontario, only the Northeastern Region has carried out any tree marking at all. In southern Ontario, it is mostly carried out in the Southwestern and Central Regions, and in 1979-80 this represented 83% of all marking done in the province under the Advisory Services Program. This appears very disproportionate if only the total woodland acreage is considered. The forests of these two regions, however, contain the most valuable hardwood stands in Ontario on a tree to tree basis.

TABLE 17

WOOD MARKED UNDER THE ADVISORY SERVICES PROGRAM
BY MNR REGION 1979-81

MNR Region	Sawtimber Marked in Cubic Metres (Cunits)	Pulpwood Marked in Cubic Metres (Cunits)
Northwestern	-	-
North Central	-	-
Northern	-	-
Northeastern	142 (50)	841 (297)
Algonquin	19 729 (6 966)	15 675 (5 535)
Eastern	8 266 (2 919)	21 331 (7 532)
Central	65 367 (23 082)	34 998 (12 358)
Southwestern	79 926 (28 222)	2 948 (1 041)
Total wood marked	173 430 (61 239)	75 793 (26 763)

It is also noted that even within the regions, considerable variation in tree marking exists at the district level. For example, Table 18 shows that for 1980-81, 71% of the sawtimber marked in the Central Region was in two of its five districts.

TABLE 18

WOOD MARKED IN THE CENTRAL REGION BY DISTRICT 1980-81

MNR District	Sawtimber Marked in Cubic Metres (Cunits)	Woodland Areas Marked in Hectares (Acres)	Fuelwood Marked in Cubic Metres (Cunits)
Cambridge	9 074 (3 204)	1147 (2832)	23 741 (8 383)
Huronia	12 891 (4 552)	579 (1430)	10 059 (3 552)
Lindsay	2 758 (974)	143 (354)	2 271 (802)
Maple	1 451 (512)	169 (417)	2 965 (1 047)
Niagara	4 744 (1 675)	743 (1834)	9 819 (3 467)
Regional total	30 918 (10 917)	2781 (6867)	48 855 (17 251)

The wide variation in the amount of timber marked within a region is probably the result of several factors: amount and condition of woodlots with merchantable timber; their proximity to markets; the owner's interest in marketing timber; and the initiative and capability of the Ministry staff providing the marking services.

Any consideration of timber marking and harvesting of timber from private land forests inevitably brings out the lack of any control beyond the terms of a contract between the owner and a logging contractor. An owner whose woodlot is infrequently logged has little opportunity or expertise to ensure the operations are undertaken properly as they progress. MNR staff cannot act in a supervisory capacity for the owner, and once the operation has been completed and the owner paid, there is little effective recourse if the operations have been done improperly.

Timber marking, under the Advisory Services Program, is concentrated in the high quality hardwood stands in the Central and Southwestern Regions. If the average volume of sawtimber marked is 4.5 m^3/ha (850 fbm/acre) and a stumpage value of \$23.85/m^3 (\$125/MBM) is applied, the owner's return on harvested marked timber is \$262.54/ha (\$106.25/acre).

A conservative estimate of the stumpage value of all sawtimber, pulpwood, and fuelwood marked in 1980-81 is \$2.7 million.

Conservation Authority Forestry Advisory Services:

In Ontario, there are 39 conservation authorities. As part of the Conservation Services Program, some conservation authorities offer landowners advice and assistance relating to woodland management and reforestation.

For the most part, conservation authority efforts in forestry extension have concentrated on tree planting,while the management of established woodlands has been given much less attention. Usually conservation authorities assist private landowners in developing conservation programs, such as windbreaks and erosion control projects.

These services tend to complement similar services offered by the Ministry's Forest Resources Group. The services offered vary among authorities; some provide complete tree planting services while others provide only tree planting advice.

Managed Forest Tax Reduction Program

The Ontario Managed Forest Tax Reduction Program, introduced in 1975 for the 1973-74 taxation year, provides municipal tax assistance to property owners who meet the eligibility standards. This incentive program is intended to encourage forest landowners to manage their woodlands. Qualifying forest landowners receive a rebate of 50% of the municipal taxes on each separately assessed property. Rebates are paid only for the managed forest area of the property concerned.

Table 19 shows that owners of 6707 properties totalling 274 744 ha (678 381 acres) of land were rebated $906 748.67 in 1980. The tax rebate covered only 6.5% of the total area of private forest land in Ontario.

In addition to rebates being paid on managed forest lands, eligible farmers can also receive a 50% tax rebate on the total property tax for their farms, and a large percentage of these farms have woodlands. The criteria for receiving the farm tax rebate are different. They do not require that the woodlands be managed to MNR standards in order to be eligible for the rebate, and farmers can receive the property tax rebate whether they manage their woodlands or not.

TABLE 19

PROPERTIES WHICH QUALIFY
UNDER THE MANAGED FOREST TAX REDUCTION PROGRAM

Program Year	Properties on Record	Properties Given Tax Reductions	Area of Properties in Hectares (Acres)
1973-74	6 662	5051	178 200 (440 000)
1975	8 125	4766	221 940 (548 000)
1976	8 505	4984	239 760 (592 000)
1977	9 181	5372	244 215 (603 000)
1978	9 877	5113	227 205 (561 000)
1979	9 727	5506	247 050 (610 000)
1980	10 751	6707	274 744 (678 381)

For the 1981 tax year, certain changes in the program have been made:

- The minimum tax eligible for rebate has been increased from $20 to $60.
- When an owner has more than one eligible property, all of them are listed on one form instead of separate forms.
- The forest portion of each separately assessed property must be a minimum of 4 ha (10 acres) unless the contiguous forest provision applies.
- The maximum rebate to an individual, partnership, or corporation is $25 000.
- Rebates are taxable income.

In 1981, it was proposed by the Treasurer of Ontario that qualifying farms and managed forests be relieved from property taxes Details on the implementation of this proposal are not yet available.

Agreement Forests Program

In 1903, Thomas Southworth, Director of Forestry for the Department of Crown Lands recommended in his annual report that municipal forest reserves be established on the land acquired by municipalities at tax sales. It was not until 1911, however, when the Counties Reforestation Act was passed, that legislative authority was given to counties and townships in districts without county organization, to pass bylaws for the acquisition of land suitable for reforestation. The bylaw provided for the planting and management of the land, and authorized the counties to issue debentures for such purposes up to $25,000 owing at any one time. The townships were not authorized to issue debentures but could impose a levy not to exceed $200 in any year. Little action resulted primarily because of the outbreak of World War I in 1914.

E.C. Drury was elected in 1919 and assumed the office of Premier of Ontario in 1920. His old friend E.J. Zavitz was, at this time, chief forester for the province. The Counties Reforestation Act of 1911 was amended. It now authorized counties to enter into agreements with the province for managing the lands they purchased for reforestation, and to sell or lease these lands. In 1921, a new Reforestation Act was passed, which allowed the Minister of Lands and Forests to acquire lands for reforestation purposes or to enter into agreements, "for purposes of reforesting, developing, and managing—for reforestation purposes—lands held by other persons."

In 1922, the first agreement forest was established in Simcoe County, with trees being planted just a few miles from the E.C. Drury farm. The close link with agriculture in these early days is illustrated by the fact that until 1927 the approval of the Minister of Agriculture was required for all bylaws passed under the authority of the Reforestation Act. In 1927, the act was replaced by the Forestry Act and approvals were now given by the Minister of Lands and Forests. The purpose of reforestation was changed to forestry and the Minister of Lands and Forests, in the process of managing lands under agreement, was permitted to sell and dispose of timber from such lands. Finally, the act was more explicit in defining the nature of land ownership as,"lands held by other persons, firms, corporations, or municipal corporations."

Subsequent amendments to the Forestry Act have not changed the basic intent, but have either provided for a wider base of ownership or become more definitive in terms of forestry purposes. For example, in 1960, towns, cities and townships with a population of 10 000 or more qualified for the same privileges as a county in terms of purchasing land for forestry purposes, issuing debentures, and entering into agreements. They could also acquire land outside their own area with the consent of the municipality where the land was situated. At this time, forestry was defined as primarily the production of wood and wood products; but also included, as secondary purposes, the provision of a proper environment for wildlife, protection against flood and erosion, recreation, and the protection and production of water supplies. In 1970, the Forestry Act was again amended to give equal status to all the purposes defined in 1960. Thus, over a period of nearly 50 years, the statement of purposes has changed from one of basic reforestation to the recognition of forestry and forest management. Initially, management was mainly for timber production, but by 1970 wildlife, recreation, environmental protection, and water supply were of equal status.

Since 1922, 60 agreements[5] have been signed with counties, townships, conservation authorities, the Government of Canada, and one company [Domtar Inc.]. Table 20 lists the agreement forests that have been established.

Until shortly after World War II, all agreement forests were county forests. In 1947, the first agreement forest with a conservation authority was created [Ganaraska], and between 1950 and 1970 the total area under agreement nearly quadrupled. During the past decade there has been some increase in the number of agreement forests. But perhaps the most significant achievement was the agreement with a forest company in 1975.

5.In 1981, an agreement with the Hamilton Conservation Authority for 5 ha (12.5 acres) was cancelled. The total number of agreements now in effect is 59.

TABLE 20

AREAS OF AGREEMENT FORESTS 1922-80

[In hectares (acres)]

Owner	1922-30*	1931-40*	1941-50	1951-60	1961-70	1971-80
Counties and regional municipalities	4 050 (10 000)	6 075 (15 000)	24 300 (60 000)	38 302 (94 572)	56 256 (138 904)	68 519 (169 315)
Townships	-	-	-	718 (1 774)	1 308 (3 229)	1 268 (3 134)
Conservation authorities	-	-	1 351 (3 337)	19 046 (47 026)	34 531 (85 261)	37 823 (93 462)
Government of Canada	-	-	-	-	1 471 (3 632)	1 430 (3 532)
Domtar Inc.	-	-	-	-	-	900 (2 224)
Total area	4 050 (10 000)	6 075 (15 000)	25 651 (63 337)	58 066 (143 372)	93 566 (231 026)	109 940 (271 667)

* The figures for these years are approximate and based on incomplete data from annual reports of the Minister of Lands and Forests.

One of the most important factors influencing the nearly fourfold increase in lands under agreement between 1950 and 1970 was the move by the province to provide grants to assist in land purchase. These grants were for amounts up to 75% of the cost of the land including legal fees. This stimulus coincided with the rapid expansion of conservation authorities during the same period. The marked reduction in the rate of increase in land acquisition is undoubtedly a reflection of increased costs of land purchase, the reduced availability of suitable properties, and government fiscal restraint in the 1970s.

The Present State:

Agreements presently in place require the area to be managed by the Ministry of Natural Resources, for the forestry purpose agreed upon, and may be for periods of not less than 20 years. While the lands are under agreement, owners cannot use them for purposes inconsistent with forestry without approval. Furthermore, the agreements can be registered against the title, so that the agreement is binding upon any successor-in-title.

For the vast majority of agreements and in particular those with counties, townships, regional municipalities and conservation authorities, MNR not only provides the management but also furnishes necessary equipment, buildings, fences, and planting stock needed to carry out the management.

Each year the agreement holder is given a report of expenses, revenue, and work done during the past year as well as proposed work for the ensuing year. MNR meets all expenses and collects all revenue. More recently, provision have been made for the agreement holder to make annual payments to the Ministry for costs incurred and conversely to receive annual revenues.

When an area is managed for recreation purposes, costs and revenues are not charged against the forest but are dealt with as current expenditures and revenue by MNR or the agreement holder, or both; and they are shared.

At the termination of an agreement, the agreement holder has three options:

(i) Pay the Minister all net costs charged against the forest without interest and assume management of his forests.

(ii) Extend the agreement for an additional period of not less than 20 years and not more than 50 years.

(iii) Sell the forest to the Crown for that portion of the purchase price paid by the agreement holder for the lands in the area under agreement.

If the agreement holder does not notify the Minister of his choice in writing during the last year of the agreement, the second option applies.

In 1975, Domtar Inc. entered into an agreement for the management of some of its lands by MNR for a period of 25 years. This agreement is unusual because it is the first with a private commercial company, and also because the terms of the agreement are considerably different from those for other agreement forests. The agreement may be terminated within 90 days upon written notice on April 1 in the years 1979, 1984, 1989, or 1994, i.e. at five year intervals. The company pays for nursery stock, and accepts 50% of the costs of stock for replanting where mortality did not arise from any cause under the control of the Minister. Forest products harvested by the company or its contractors are subject to stumpage payable to the Crown. With written approval from the company, the Minister may harvest forest products which may be sold in the market place. The company, in turn, is given the first opportunity to purchase these products at current prices. In either event, the proceeds are treated as revenue. All logs produced from the area will be scaled by the Crown and the costs of scaling treated as a management expense. All hunting and fishing rights on the lands under agreement are transferred to the Crown, but approval by the company is required if the Crown wishes to allow hunting and fishing to take place. Any revenues derived from hunting and fishing are not credited to the forestry account.

The original Domtar agreement was for 405 ha (1000 acres), but provision was made for additions and currently the area under agreement is 901 ha (2224 acres) with a maximum of 4050 ha (10 000 acres). Although this agreement has provisions for annual reports similar to other agreements, the Crown must also provide a work plan outlining the work to be performed and its estimated cost, for the company to approve at the beginning of each year. As with other agreement forests, there are three options available at the termination of the agreement. The first option is the same—the company pays the Crown all expenditures less revenue, without interest, and assumes management of the property. The second option allows for renewal of the agreement for a further 20-year period. The third option allows the Minister to acquire the land at a purchase price equivalent to market value providing the company pays the Minister all expenditures less revenue, without interest. The agreement with Domtar Inc. was entered into with the specific intent of using the lands to produce hybrid poplar for the company's mill at Cornwall.

By 1950, a total of 19 counties and regional municipalities had signed agreements with MNR. Between 1950 and 1980, 11 more agreement forests were established with similar owners. The first conservation authority to acquire land and place it under agreement was the Ganaraska Authority in 1947. Since then, a total of 22 conservation authorities have entered into agreements [Table 21]. In 1961, the National Capital Commission entered into an agreement for 1430 ha (3532 acres) of forest lands in the Ottawa green belt.

TABLE 21

AGREEMENT FORESTS TO MARCH, 1981

Government of Canada	1
Conservation authorities	22
Townships	10
Counties	19
Regional municipalities	6
Industry	1
Total	59

Of the 59 agreement forests covering 110 025 ha (271 667 acres) of forest lands, 62% are owned by counties, townships, or regional municipalities and 34% are owned by conservation authorities. In terms of management efficiency, the size and distribution of forest areas can be relevant, particularly in terms of ownership. Table 22 lists agreement forests 2025 ha (4999 acres) or larger, in decreasing order of magnitude.

TABLE 22

AGREEMENT FORESTS 2025 HA (4999 ACRES) OR LARGER
TO MARCH, 1981

Owner	Agreement Areas in Hectares (Acres)
Simcoe County	11 386 (28 114)
Prescott and Russell Counties	10 547 (26 042)
Moira River Conservation Authority	6 967 (17 202)
Renfrew County	6 295 (15 544)
Bruce County	6 210 (15 333)
Saugeen Valley Conservation Authority	5 698 (14 068)
Leeds and Grenville Counties	5 519 (13 627)
Ottawa-Carleton Regional Municipality	4 743 (11 711)
Lanark County	3 616 (8 928)
Victoria County	3 500 (8 642)
Ganaraska Conservation Authority	3 499 (8 639)
Grey County	3 308 (8 169)
Stormont, Dundas, and Glengarry Counties	2 971 (7 337)
North Grey Region Conservation Authority	2 937 (7 251)
South Nation River Conservation Authority	2 852 (7 042)
Napanee Region Conservation Authority	2 700 (6 666)
Long Point Regional Conservation Authority	2 596 (6 411)
Northumberland County	2 049 (5 060)
York Regional Municipality	2 025 (4 999)
Total agreement forests area	89 418 (220 785)

The nature and productivity of lands under agreement vary tremendously. In the Southwestern Region, the majority of the forests in Bruce County are on shallow soils; in Grey County they grow on gravelly drumlins and poorly drained lands. Yet some of the most productive soils, in terms of species and quality, are the small areas bordering Lake Erie and southern Lake Huron that are owned by conservation authorities. In the Central Region, the largest agreement forest [Simcoe County] is mainly on sandy soils of high productivity, which are particularly good for growing pines.

Financial Status:

As required by the agreements, costs of management are recorded. Although general administration and office overhead costs of persons working directly on the agreement forests are charged, there is a portion of administrative and capital costs at the district and regional levels that are not. Expenditures for equipment used on all agreement forests over the last 60 years has totalled only $945. This can be attributed to the Ministry buying some of the agreement forest equipment and then using it in other Government programs.

Expenditures for recreational opportunities, which have only been made in recent years, usually do not exceed $1500. The exceptions have been:

York Regional Municipality	$169 300
Durham Regional Municipality	$ 41 500
Ganaraska Conservation Authority	$ 29 000

The expenditures given in Table 23 do not include the purchase price of the land; nor do they include the value of grants, made by the Ministry since 1960 to agreement holders, towards the purchase of land to be placed under agreement.

TABLE 23

1980 CUMULATIVE EXPENDITURES AND REVENUES FOR AGREEMENT FORESTS BY OWNER

Owner	Expenditures	Revenues*
Counties and regional municipalities	$12 884 055	$2 765 288
Conservation authorities	3 218 091	842 087
Townships	195 881	26 723
National Capital Commission	952 477	67 462
Domtar Inc.	327 335	1 185
Total	$17 577 839	$3 702 745

* 96% of revenues come from the sale of forest products.

Purchase prices for land have been increasing dramatically. Prior to 1940, prices of less than \$25/ha (\$10/acre) were common. In eastern Ontario as late as the 1960s, much land could be purchased for \$25/ha to \$50/ha (\$10 - \$20/acre). Since 1970, prices ranging from \$250/ha to \$1235/ha (\$100 - \$500/acre) have become the norm. The marked reduction in the rate of land acquisition for agreement forests [Table 20] is in part a reaction to the increased land prices.

The listing of expenditures in Table 23 aggregates values for all agreements for 1980. Much of the land purchased, particularly in the early years, was farm land of low productivity, and often with associated erosion or other environmental problems. Current efforts have been directed toward rehabilitating these lands by planting new forests, and tending them along with any existing forests to increase and improve the forest itself. In effect, these expenditures represent a capital investment in the land that will improve its productivity and condition both economically and environmentally. Table 24 breaks down the expenditures on agreement forests.

TABLE 24

A BREAKDOWN OF EXPENDITURES ON AGREEMENT FORESTS

Expenditures	Percentage of Total Expenditure*
General administration, office overhead and maintenance	20.8
Forest protection and pest control	17.7
Planting	17.7
Roads	8.2
Tending	21.9
Cutting operations	7.7
Recreational opportunities	0.9
Improvement projects—buildings and permanent installations	2.9
Equipment	-
Special MNR and joint Government programs§	2.2
	100.0

* Total expenditure \$17 577 839

§ Includes Agricultural Rural Development Assistance [ARDA] program and the Department of Regional Economic Expansion [DREE]

Planting, tending, forest protection, and pest control together account for 57.3% [\$10 072 101] of the total expenditure. The extent of these operations is further reflected by the data in Table 25 showing the nature of the productive forest, particularly in the area of productive conifers.

The Nature of Ontario Forests:

Complete information on the nature of Ontario forests is not available, although new forest inventories are presently being undertaken. However, data compiled on 21 agreement forests—summarized in Table 25—representing 65 704 ha (162 232 acres) or 60% of the total 109 350 ha (270 000 acres) are most probably representative of forest conditions.

TABLE 25

THE NATURE OF ONTARIO FORESTS

[Based on data from 21 agreement forests]

Unproductive Areas	Hectares (Acres)		Percentage of Total Area	
Water	310 (765)		0.5	
Protection forests	4 351 (10 142)		6.6	
Non-productive forests	4 464 (11 022)		6.8	
Non-forested land	1 523 (3 760)		2.3	
Sub-total	10 404 (25 689)	10 404 (25 689)	15.8	15.8
Productive Forest				
Conifers	29 304 (72 355)		44.6	
Hardwoods	25 996 (64 188)		39.6	
Sub-total	55 300 (136 543)	55 300 (136 543)	84.2	84.2
Total forest area		65 704 (162 232)		100.0

Conifer stands predominate in the productive forest areas. The majority of them were established by planting. For example, the white, red, jack, and Scots pine stands together account for 16 416 ha (40 533 acres) of the total conifer area, and spruce stands account for another 6711 ha (16 570 acres). The amount of unproductive area [water, protection forest, non-productive forest, and non-forested land] varies from 2% for Simcoe County and Long Point Regional Conservation Authority forests to 90% for the Napanee Region Conservation Authority agreement forest. The latter has a total area of 2700 ha (6666 acres).

Although a breakdown of forests by age class distribution is not available because of incompleteness of the inventory, two assumptions can be made. First, revenue from hardwoods would come largely from mature hardwood forests of limited extent that have been mainly acquired by conservation authorities. Second, revenue from planted conifers would begin after the stands reached polewood size. Since the major acquisitions of land placed under agreement took place between 1950 and 1970, large portions of the plantations have yet to reach merchantable size. An estimated 130 million trees have been planted on agreement forest lands since 1922.

An appreciation of the change in value and use of agreement forests with time can be obtained by inspecting some of the older forest areas such as the Simcoe County Forest.

Simcoe County Forest:

The first plantings took place in 1922 in the Hendrie Tract. A large proportion of the agreement forest was land which was too sandy, stony or too wet to farm, although most of it was open land and had been cleared and farmed at one time or another. Peak planting occurred in the 20-year period from 1930-50. The average annual planting is presented in Table 26.

TABLE 26

AVERAGE ANNUAL PLANTING FOR
SIMCOE COUNTY FOREST

Period	Trees Planted Per Year
1922-30	230 900
1931-40	499 341
1941-50	454 577
1951-60	368 645
1961-70	322 220
1971-80	176 904

For the first 25 years, little in the way of forest products was harvested other than fuelwood,and a small quantity of sawlogs from the hardwood woodlots was obtained. In 1948, the first thinnings of conifer plantations began and harvesting has continued regularly ever since. A summary of the wood production since 1948 is shown in Table 27.

TABLE 27

SIMCOE COUNTY FOREST WOOD PRODUCTION 1948-80

Year	Sawlogs in Cubic Metres (Board Feet)	Boltwood & Posts in Cubic Metres (Cords)	Fuelwood in Cubic Metres (Cords)	Pulpwood in Cubic Metres (Cords)	Poles in Cubic Metres (Cunits) or Pieces	Revenue from Sale of Products
1948-56	-	-	-	-	-	$30 055 (est.)
1957-60	-	-	1 088 (300)	10 512 (2 900)	-	
1960-61	60 (11 390)	65 (18)	2 030 (560)	5 887 (1 624)	470 pcs	15 586
1961-62	177 (33 700)	11 (3)	1 530 (422)	6 888 (1 900)	1 900 pcs	42 574
1962-63	73 (14 000)	22 (6)	1 037 (286)	10 277 (2 835)	30 pcs	22 750
1963-64	679 (129 510)	199 (55)	1 501 (414)	8 211 (2 265)	4 632 pcs	36 527
1964-65	692 (131 884)	569 (157)	3 835 (1 058)	15 714 (4 335)	4 071 pcs	31 556
1965-66	1 107 (211 154)	1095 (302)	399 (110)	20 735 (5 720)	155m³ (54.9cunits)	46 789
1966-67	-	-	-	19 169 (5 288)	87 m³ (30.6cunits)	45 522
1967-68	431 (82 154)	576 (159)	141 (39)	24 788 (6 838)	280 m³ (99.0cunits)	31 431
1968-69	1 169 (222 881)	921 (254)	1 051 (290)	23 878 (6 587)	112 m³ (39.8cunits)	48 486
1969-70	175 (33 418)	-	1 015 (280)	19 803 (5 463)	575 m³ (203.1cunits)	45 213
1970-71	-	11 (3)	1 939 (535)	12 020 (3 316)	37 m³ (13.0cunits)	20 777
1971-72	236 (45 000)	4 (1)	334 (92)	18 295 (5 047)	2 m³ (.7cunits)	26 880
1972-73	847 (161 484)	420 (116)	210 (58)	15 598 (4 303)	243 m³ (85.7cunits)	19 876
1973-74	854 (162 906)	-	373 (103)	38 371 (10 585)	2 420 m³ (854.9cunits)	62 786
1974-75	1 312 (250 265)	1657 (457)	3 814 (1 052)	28 590 (7 887)	582 m³ (205.7cunits)	65 086
1975-76	76 (14 528)	877 (242)	2 856 (788)	10 313 (2 845)	2 100 pcs	24 943
1976-77	19 (3 697)	51 (14)	2 498 (689)	22 798 (6 289)	5 697 pcs	73 492
1977-78	138 (26 408)	181 (50)	5 231 (1 443)	14 783 (4 078)	4 082 pcs	53 886
1978-79	389 (74 108)	-	6 112 (1 686)	22 163 (6 114)	8 555 pcs	83 457
1979-80	1 452 (276 974)	-	6 630 (1 829)	32 226 (8 890)	310 m³ (109.4cunits)	155 268
Total	9 886 (1 885 461)	6659 (1837)	43 624 (12 034)	381 019 (108 109)	4 803 m³ (1696.8cunits) 31 537 pcs	$983 240

The revenues in Table 27 were derived from about 10 125 ha (25 000 acres) of woodlands, and if the 1979-80 annual expenditures totalling $91 268 are compared with the year's record high revenues of $155 268, a net gain of $64 000 has resulted. While revenues will fluctuate depending upon markets, it is clear that the productivity of these lands as forests has increased. In addition, other values in these forests such as recreational use and environmental benefits have been enhanced over the years.

The Simcoe County agreement forest is only one example, and it illustrates the capital asset that has been created. Examination of the balance sheets for other agreement forests shows that for the year 1979-80 seven of the county and regional municipality forests and six of the conservation authority forests showed a credit balance.

Three conservation authority forests show an overall net credit since being placed under agreement.

• Long Point Region Conservation Authority	$89 353
• Sauble Valley Conservation Authority	$37 060
• Catfish Creek Conservation Authority	$9 857

These favourable balances are a result of both good forest management and sales of hardwood forest products.

In an accounting sense, it must be emphasized that direct operating expenditures in the agreement forest ledgers substantially underestimate the actual total costs. Furthermore, interest charges which are the single largest cost item are not included. For example, major equipment costs, stock production costs, several categories of administrative costs, and land purchase costs are not included.

Although the objective of the Agreement Forest Program was not financial viability, these financial data do demonstrate that significant revenues can occur from managed forests when sufficient merchantable growing stock exists either naturally or from reforestation.

Recreational and Educational Uses:

A vigorous and healthy forest will inevitably provide opportunities for many uses. Prior to 1970, and especially prior to 1960, little recognition was given to recreational use. As plantations developed into polewood and older stands, thinnings and improvement cuttings created greater access. The result has been increasing recreational use of forest lands, particularly where agreement forests have been relatively short distances from major and expanding centres of urban populations. The Larose Forest, southeast of Ottawa, and the Vivian Tract of York Regional Municipality, north of Toronto, are examples of agreement forests with much recreational use.

Other Agreement Forests:

Throughout the seasons each year, thousands of people visit agreement forests. For example, York Region's Vivian Forest annually attracts 50 000 people who walk, run, horseback ride, picnic, fish, hunt, ski, and snowmobile there. Many agreement forests are used for formal educational purposes; for example, six school boards use the Ganaraska Forest in their outdoor educational programs based at the Ganaraska Conservation Authority Forest Centre.

Although agreement forests are open for public use, not all permit unlimited activities. For example, snowmobiles may not be allowed or they may just be allowed in restricted areas. Hunting is not permitted in certain forests. Frequently, the successful development of agreement forests has resulted in major increases in both numbers and species of wildlife. In the Larose Forest, where the older and more intensively used recreational areas consist mainly of pine plantations, there is a nesting ground for 47 species of birds. In addition, during recent years it has developed a moose population large enough to sustain an occasional moose hunt as well as hunts for deer, grouse, and rabbits.

It seems clear that if agreement forests are to continue to provide opportunities for a wide array of uses, this can only be done by continuing a forest management program that undertakes the manipulation of a forest in order to meet this objective. Such manipulation will inevitably require cutting and harvesting merchantable timber as well as regenerating, tending, and protecting the forests. The existence of these operations would be an increasing encouragement to both forest owners and those who manage their forests. The greater the evidence before the public that their forests can be managed for the benefit of all, the greater will be the recognition of the importance of these forests and the likelihood of growing support.

Windbreaks and Shelterbelts

Windbreaks and shelterbelts can be important in conservation practices and for providing aesthetic improvements. Extensive clearing of forests for agricultural use has resulted in low levels of forest cover in parts of Ontario. In Essex and Kent Counties, for example, less than 3% of the forest cover remains; and this has produced serious problems in crop production, soil erosion, and energy consumption.

There are three types of windbreaks or shelterbelts:

(i) Residential and farmstead shelterbelts are used to reduce heating costs, and indirectly reduce livestock food consumption. They generally provide the shade and shelter that not only moderate climate extremes, but also add to the diversity of vegetation.

(ii) Field shelterbelts are placed to protect crops, to increase crop yields, and to reduce wind and water erosion. In so doing, they increase the per unit area effectiveness of farm machinery in fields.

(iii) Roadside and railway shelterbelts serve mainly to reduce wind and snow drifting along roads and railways. In this way they serve, indirectly, to minimize the possibility for certain types of accidents.

The Ontario Ministry of Natural Resources supplies nursery stock for use in windbreaks and shelterbelt plantings, and several conservation authorities provide both advice and planting assistance to landowners. The amount of planting stock used in windbreaks and shelterbelts is unknown; but as of 1981, applications for MNR nursery stock require that stock required for this use be stated.

A special windbreak planting program was begun in 1980, jointly funded under a Canada/Ontario, Eastern Ontario, DREE subsidiary agreement. In 1981, plans were prepared for approximately 150 windbreaks to be established by landowners.

The Ontario Ministry of Agriculture and Food is presently undertaking studies on the use of shelterbelts but does not have any assistance program available for shelterbelt establishment. The major benefits to be achieved from a windbreak and shelterbelt program will most likely be attained when such a program is directed towards the rural residential population, especially farmers.

IV. PRIVATE LAND FORESTRY EXPENDITURES BY THE MINISTRY OF NATURAL RESOURCES

MNR expenditures on private land forestry [PLF] have been taken from the records of the Expenditure Accounting System [EAS] for the six-year period 1975-81. They have been documented and analyzed in relation to specific programs.

The basic items extracted from the EAS were the time series data as they related to the following areas:

- Organizational Unit - Ministry of Natural Resources
  - Forest Resources Group [Main Office]
  - MNR administrative regions
- Common Object Code - A salaries [permanent]
  - B salaries [non-permanent]
  - transportation, communications, supplies, services and equipment [TCSS & E] which are all items excluding salaries
  - total expenditures
- PLF Functions - Woodlands Improvement Program
  - Advisory Services Program
  - Agreement Forests Program
  - transfer payments

The analysis and documentation of expenditures were undertaken to provide a basis for consideration and discussion of the following:

(a) The level of MNR expenditure on PLF.
(b) The distribution of PLF expenditures to the administrative regions.
(c) The distribution of PLF expenditures between A salaries, B salaries, and TCSS & E.
(d) The relative emphases on the various PLF functions as indicated by expenditures.

In these analyses, the trends over time have been documented. Although the EAS codes and year-end reports were utilized for the period 1975-81, it is important to recognize in the tables and figures that the data contain a number of anomalies and inconsistencies. These are the result of periodic changes in the accounting codes affecting the definition and detail of various items; and differences in the coding practices, both between the regions and over time within a given region, as to how and where expenditures are coded.

With two exceptions [a Woodlands Improvement Program item and a transfer payment item], the EAS report data has been used for analysis and documentation, without adjustments being made.

In 1980-81, the total expenditure on the PLF functions was $5.2 million. The historical pattern of PLF expenditures is shown in Table 28.

TABLE 28

PRIVATE LAND FORESTRY EXPENDITURES
1975-81

[In millions of dollars]

PLF Function	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
Woodlands Improvement Program assistance	$1.157	$1.367	$1.351	$1.240	$1.518	$1.841
Advisory and extension services	0.471	0.828	1.142	1.161	1.251	1.520
Administration and management of agreement forests	0.835	0.561	0.768	1.199	1.208	1.058
Transfer payments	0.639	0.818	0.789	0.766	0.681	0.741
Total expenditures	$3.102	$3.574	$4.050	$4.366	$4.658	$5.160
Percentage increase over previous year	-	15%	13%	8%	7%	11%

Expenditures on private land forests are part of the MNR overall expenditure on forest management [forest management activity in the EAS] in the province. In 1980-81, PLF expenditures comprised 7.2% of the total forest management expenditure in Ontario. This was a lower proportion than in 1979-80 when it was 8.5%, and a stable 10% of the total over the previous four years. Table 29 gives the per cent increases in expenditures for PLF programs in relation to forest management activity, the Ministry, and the resources development policy field. While PLF expenditures have increased at the same rate as the Ministry's, they are substantially lower than the increase in forest management activities. Within private land forestry, only expenditures for the Advisory Services Program have increased significantly; transfer payments and agreement forests have grown to a very limited degree.

TABLE 29

COMPOUND RATES OF GROWTH IN ANNUAL EXPENDITURES

[Based on 1980-81 expenditures over those for 1975-76]

Private Land Forestry Programs	
Woodlands Improvement Program	+10%
Advisory Services Program	+17%
Agreement Forests Program	+6½%
Transfer payments	+ 3%
All private land forestry	+11%
Forest management activities	+19%
Ministry of Natural Resources	+11%
Resources development policy field	+ 7%

Woodlands Improvement Program

This program is the largest of the four PLF programs. Province-wide woodlands improvement expenditures have grown dramatically in the last two years, averaging 10% per year over the 1979-81 period [Table 29].

These expenditures have been equally distributed between the three southernmost regions [Fig. 4]. although a clear demarcation has occurred in the last three years with the Eastern Region rapidly increasing to 50% of total expenditures, while a decrease occurred in the Central Region's program.

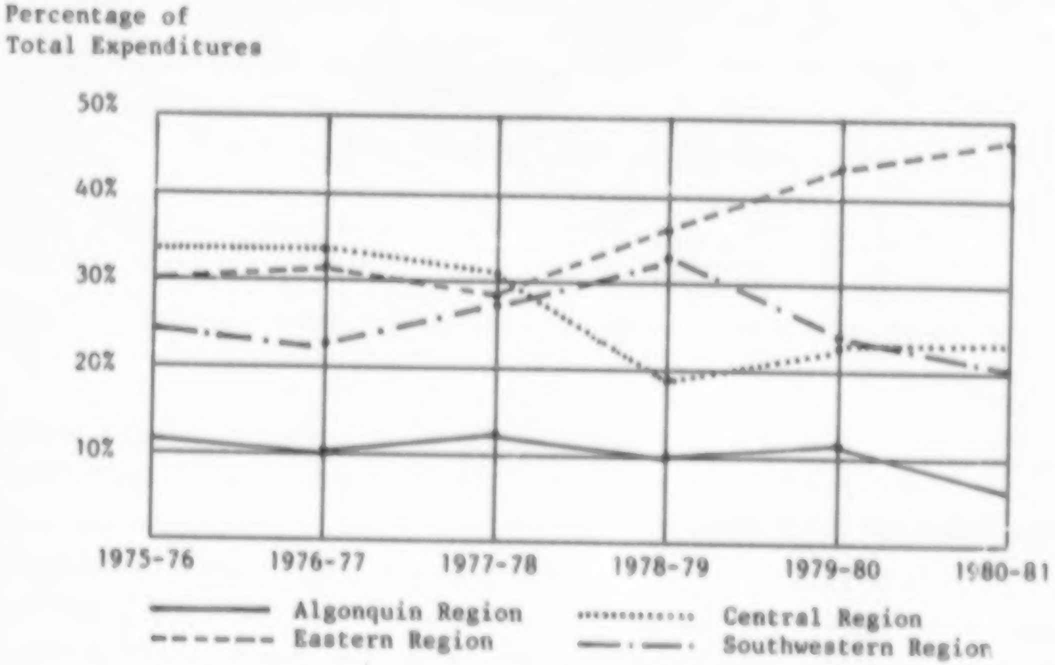

Figure 4. Regional distribution of Woodlands Improvement Program expenditures

The composition of Woodlands Improvement Program expenditures shown in Fig. 5 is currently in a stage of marked transition, as the historic emphasis on B salaries is being replaced with purchased services [TCSS & E]. The level of A-salary expenditures has been largely static over the period, with all but the Southwestern Region charging a fixed number of A-salary man-years to the Woodlands Improvement Program each year.

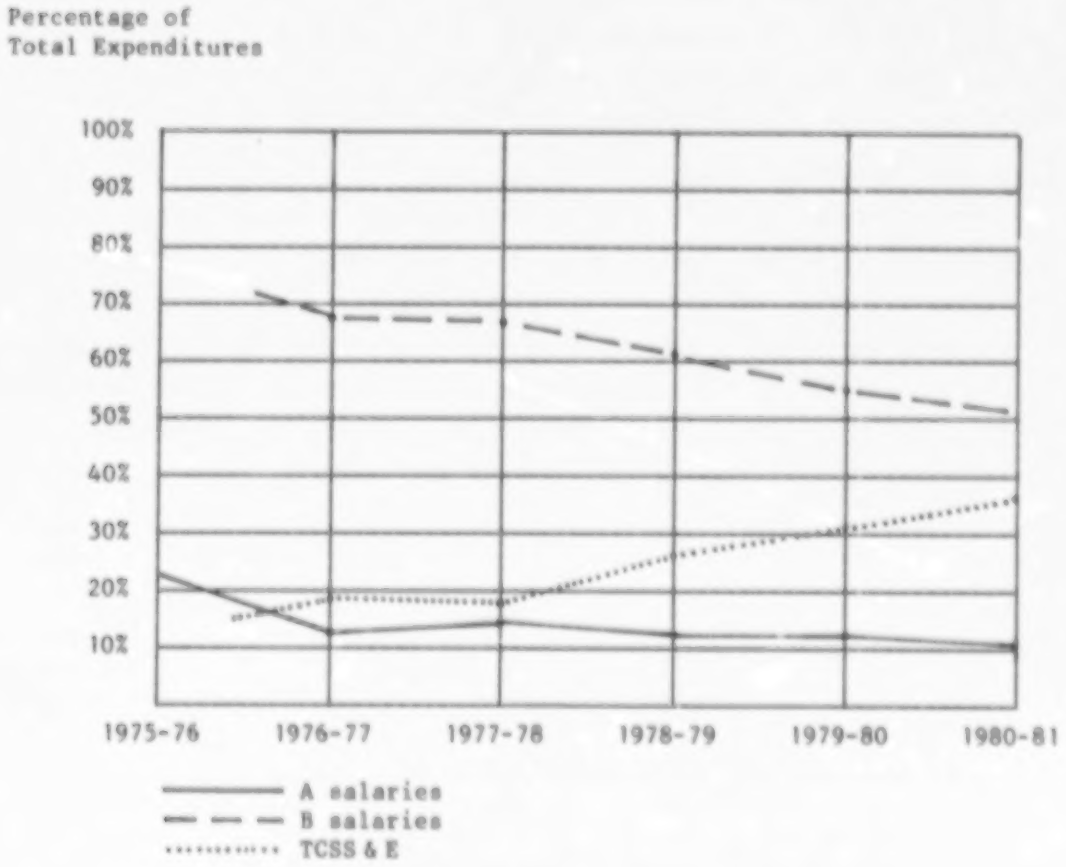

Figure 5. The composition of Woodland Improvement Program expenditures

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Advisory Services Program

Private land forestry's Advisory Services Program exhibits the greatest expenditure growth rate among the four PLF programs. The expenditure increase from less than $500 000 in 1975-76 to more than $1.5 million in 1980-81 represents a 17% annum [compound] growth rate [Table 29].

Expenditures are concentrated in the three southernmost regions [Fig. 6] with two significant shifts occurring:

(i) increasing relative proportions in the Eastern and Southwestern Regions; and

(ii) decreasing relative proportions in the Algonquin Region and Main Office.

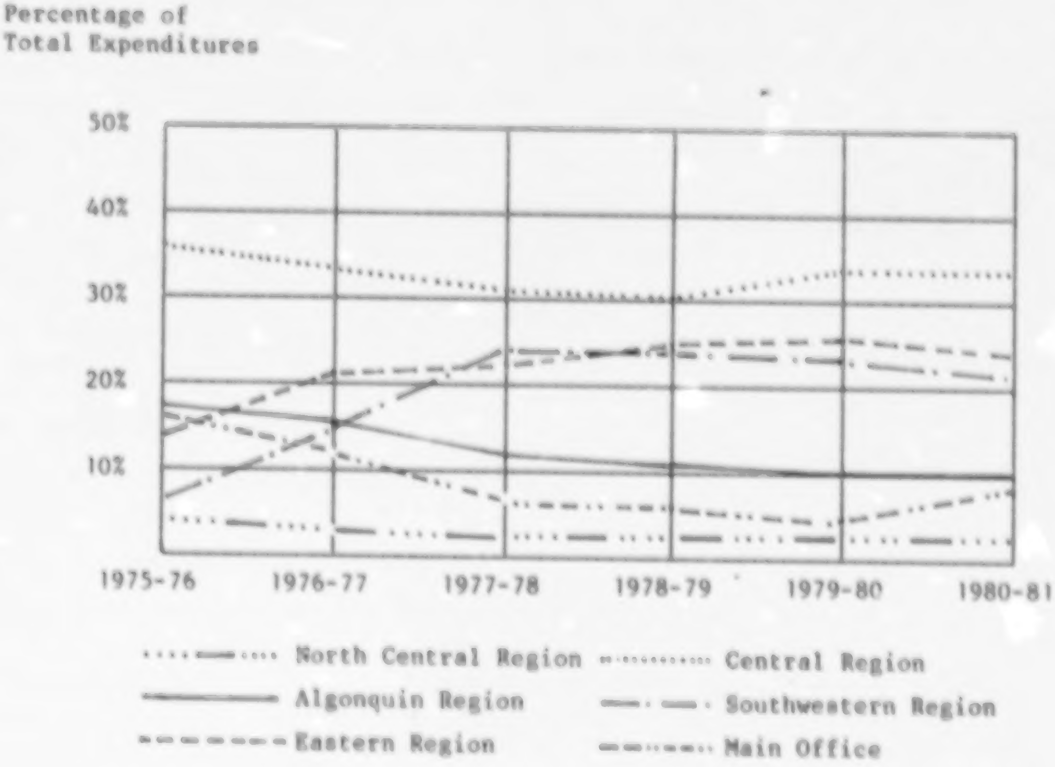

Figure 6. Regional distribution of Advisory Services Program expenditures

The composition of Advisory Services Program expenditures in Fig. 7 shows 70% on A salaries, about 15% on B salaries, and about 15% on TCSS & E. This composition has been markedly static over the six-year period for the province, although the Eastern Region has a much lower and continuously declining ratio of A salaries in its Advisory Services Program than the other two MNR regions.

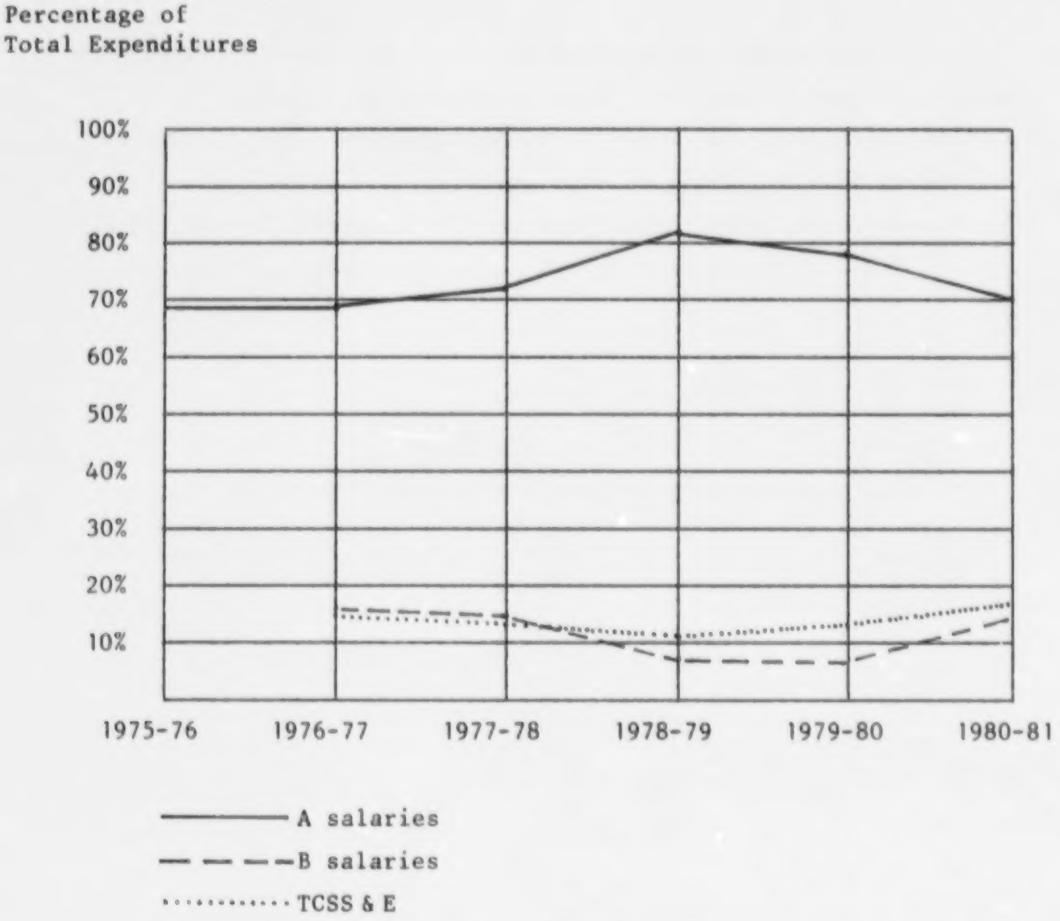

Figure 7. The distribution of Advisory Services Program expenditures by object code.

Agreement Forests Program

The Agreement Forests Program exhibits an essentially stable level of expenditures for the period 1975-81.

The approximate $1 million of expenditures comprise fixed proportions of A salaries [37%], B salaries [42%], and TCSS & E costs [21%]. This ratio, however, varies among the regions, as shown in Table 30, with high salary ratios in the North Central, Algonquin, and Central Regions and low salary ratios in the Eastern and Southwestern Regions.

In terms of regional emphasis, the Eastern and Central Regions have consistently dominated, representing 70% to 85% of total agreement forest expenditures.

TABLE 30

DISTRIBUTION OF AGREEMENT FOREST EXPENDITURES BY MNR REGION

	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
Agreement Forest Expenditures [$ millions]	0.835	0.561	0.768	1.199	1.208	1.058
Per Cent Distribution of Agreement Forest Expenditures						
North Central	-	-	-	19	28	10
Eastern	54	45	31	44	28	53
Central	30	41	52	28	33	25
Southwestern	8	11	15	8	8	11

Transfer Payments

In addition to its active private land forestry role in respect to woodlands improvement advisory services, and administration and management of agreement forests, MNR has another, more passive PLF role which is the provision of transfer payments—grants from the province to other levels of government or to various associations.

PLF transfer payments, for the period 1975-81, are summarized in Table 31.

TABLE 31

ANNUAL TRANSFER PAYMENTS

Type of Payment	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
Managed forest tax reduction	$480 816	$404 694	$404 751	$423 578	$449 416	$490 444*
Grants to municipalities and conservation authorities to purchase lands for forestry purposes	138 163	393 012	359 444	321 997	201 694	282 688
Ontario Forestry Association	20 000	20 000	20 000	20 000	30 000	30 000
Ontario Christmas Tree Growers Association	-	-	-	-	-	30 000
Ontario Medical Association	-	-	-	-	-	7 500
Canadian Forestry Association	-	-	5 000	-	-	-
Total payments	$638 979	$817 706	$789 195	$765 575	$681 110	$740 632

*Estimated expenditure.

Transfer payments total about three-quarters of a million dollars annually. This level has been essentially static since 1975-76; its purchasing power thus having been reduced in relation to the rates of inflation. The two major components have been half a million dollars per year for property tax rebates and a quarter million dollars per year for the acquisition of forestry-purpose lands.

In summary, over the period 1975-81, expenditures have increased at a compound annual rate of 11%, which was slightly greater than general inflation and the same rate as for Ministry total expenditures. The increase was much less, however, than that for the forest management activity as a whole.

In 1980-81, private land forestry expenditures totalling $5.14 million, were distributed to the following programs:

Woodlands Improvement Program	$1 841 000	36%
Advisory Services Program	$1 500 000	29%
Agreement Forests Program	$1 058 000	21%
Transfer payments	$ 741 000	14%

Also, PLF expenditures in 1980-81 were distributed among the regions as follows:

Northwestern Region	$155 000	3%
North Central Region		
Northern Region		
Northeastern Region		
Algonquin Region	$ 312 000	6%
Eastern Region	$1 817 000	35%
Central Region	$1 182 000	24%
Southwestern Region	$ 821 000	16%
Main Office[6]	$ 872 000	17%

Woodlands improvement assistance expenditures, which have increased at a compound annual rate of 10%, have traditionally been distributed at about 25% to 35% in each of the three southernmost regions and 10% in the Algonquin Region. Presently the Eastern Region has increased its share to 46% with reductions in the Central [23%] and Southwestern [21%] Regions. There has been a reduction in A salaries and an increase in the TCSS & E component in the Eastern Region.

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[6] Virtually all of this amount was transfer payments.

Advisory services expenditures have exhibited a 17% per year rate of compound growth. These increases have been major in the Eastern Region and moderate in the Southwestern Region; and there have been reductions for the Algonquin Region and Main Office. The Advisory Services Program is dominated by A-salary expenditures [70% of the total expenditure] and has shown no shift in composition over the six-year period.

Agreement forest expenditures [excluding land purchase grants] have declined in both real and nominal terms over the past two years. The expenditures are concentrated in the Eastern and Central Regions [70% to 80% of the total] but show no inter-regional shifting over the period. They are dominated by a blend of A- and B-salary expenditures [each approximately 40% of the total] and have a small and static TCSS & E component—although programs in the Eastern and Southwestern Regions do exhibit lower than average ratios of salaries-to-total expenditure.

Transfer payment expenditures have been essentially static over the period 1975-81 [their real purchasing power has declined with the rate of inflation]. The major portion comprises grants of half a million dollars per year to municipalities and conservation authorities for land purchase, in addition to small grants to various special interest groups.

Private land forestry has been characterized by a very high ratio of A- and B-salary expenditures throughout the six-year period. In the Woodlands Improvement Program there has been a notable substitution of TCSS & E expenditures for B-salary expenditures. In the other programs, there has been little change in proportions of the main components.

The Eastern Region has shown a marked decrease in A and B salaries in the Woodlands Improvement, Agreement Forests, and Advisory Services Programs. This trend is essentially absent in all other regions and components, with the exception of a shift in the Southwestern Region's agreement forest expenditures.

V. TAXATION AND PRIVATE LAND FORESTS[7]

The nature of the tax system is rooted in the Constitution of Canada. In Ontario, the principal taxes levied are:

federal - income taxes—corporate and personal
- excise tax
- custom duties

provincial - income taxes—corporate and personal
- consumption taxes (retail, motor fuel, etc.)
- mining tax

municipal - property tax

Taxes of particular relevance to forestry practices on private lands are income and property taxes.

Income Taxes

The treatment of expenses and income by a private forest landowner is dependent, to some degree, on the classification of his property by the Canadian Income Tax Act and Regulations.

At present, five classes of forest property are recognized:

(i) Timber Resource Property:

This is defined as a tenure, subject to renewal, as is the case when a person has a license to cut timber on Crown land.

(ii) Timber Limit and Cutting Rights:

A ruling of the Supreme Court of Canada [1966] states that ownership of a timber limit includes both land and timber. Cutting rights may be defined as the right to cut timber and remove it, provided the area is not a timber resource property. Thus, the sale of standing timber by a private landowner to a contractor gives the contractor a cutting right. The owners of timber limits or cutting rights are usually considered to be engaged in the lumbering or logging businesses; whereas owners of other classes of property may obtain most of their income from other activities.

(iii) Farm Woodlot:

These are woodlands from which bona fide farmers may sell forest products. This income is generally minor in relation to income from farming operations. Such forest product-based income is treated as income from farming.

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[7] This section is based on the following report:
Ontario. Ministry of Natural Resources. Taxation and Forest Management on Private Lands in Ontario. Toronto, 1981.

(iv) Tree Farm:

The planting, tending, and harvesting of Christmas trees is regarded as a farming business. Normally, there is a time limit of six or more years after planting [depending upon local conditions], beyond which the tree farm designation is not allowed. It is considered that the tree farm designation can be applied to deciduous as well as coniferous species.

(v) Forest Planting:

These are properties on which reforestation and subsequent management activities are undertaken to produce mature timber for some future time. The taxpayer must demonstrate that the activities undertaken constitute a business with a "reasonable expectation of profit". In order to meet this test, it is necessary for the taxpayer to show that the reforestation project that was undertaken in a systematic way, is being conducted in a businesslike manner, and holds forth the prospect of a profit when the trees are mature.

Lands that contain stands of timber other than plantations may be treated as forest plantings, providing they are managed in a similar businesslike way with a reasonable expectation of profit. The classification of a property as a forest planting accompanies the property even upon change of ownership, providing the new owner strives to manage the property accordingly. The criteria for the classification of forest properties is summarized in Table 32.

TABLE 32

CRITERIA FOR CLASSIFICATION OF FOREST PROPERTIES

Property	Taxpayer Owns Land	Taxpayer is in Logging Business	Taxpayer Must be a Farmer
Timber resource	no	yes	no
Timber limit or cutting rights	yes/no	yes	no
Farm woodlot	yes	no	yes
Tree farm	yes	no	no
Forest planting	yes	no	no

Income earned by an individual or company from the sale of standing timber or forest products will normally be considered business income and be taxed accordingly. Where losses are incurred, as happens when management costs exceed income from a forest property, the taxpayer may deduct the loss against income earned from other sources during the same taxation year. However, if the owner is considered a "hobby farmer" [where he is tree farming on a bona fide business basis but his chief source of income is other than farming], the total deduction may be limited to a maximum of $5 000 in a taxation year.

Forest management expenses that are eligible for deduction include property taxes, interest paid on mortgages or loans for forest activities, reforestation costs, stand tending, site improvement costs [fertilizing, drainage, etc.], and direct harvesting costs.

Capital cost allowances may be claimed at varying rates depending upon the class of depreciatory assets. Since 1971, capital gains have been subject to tax on the basis that half of all capital gains are taxable and included in the taxpayer's income.

If there is no intention of profit or reasonable expectation thereof, then no deduction of management expenses is permitted. Such expenses are simply personal expenses.

Property Taxes

Following the Report of the Commission on the Reform of Property Taxation [1977], Ontario moved to "market value" assessment. This meant that privately owned forest lands, except farm lands, would be assessed at the highest value that could be obtained in the open market. The presence or absence of trees does not affect the assessment. Since Ontario does not recognize tree farming as a bona fide farming operation, woodlots, unless they have meet certain criteria as part of a farm operation and property, are therefore assessed in one or other categories for assessment purposes. This lack of recognition of managed forest properties, as requiring a separate consideration, has provoked considerable concern from both owners and the Ontario Forestry Association on their behalf. Although concern for the assessment status of forest properties intensified after 1977, it was expressed earlier in 1974 as a result of recommendations made by the Farm Classification Advisory Committee [FCAC].

Largely in response to changes in classification following the implementation of the FCAC's report and the implications this had for forest properties, a Managed Forest Tax Reduction Program was introduced in 1975. Under the authority of the Forestry Act, the province pays a 50% tax rebate on managed forests. The program is funded through MNR.

In 1981, the Honourable Frank Miller, Treasurer of Ontario proposed that full exemption be given on property taxation for defined farm lands and buildings as well as managed forests. The existing tax rebate program would be terminated, and the province would compensate municipalities and school boards for taxes foregone through exemptions or other mechanisms. The new program is expected to begin in 1983.

VI. ASSOCIATIONS

There are several associations and one cooperative in Ontario that represent, to a greater or lesser degree, the interests of private forest landowners. One of these, the Ontario Forestry Association, has a broad concern, while the others are related to specific uses of or products from the forest, or to forests in a specific geographic area.

Ontario Forestry Association [OFA]

The OFA, chartered in 1949, is a non-profit, non-political organization of individuals working "to secure the wise use, care and development of Ontario's forest resources." It has 1500 members, a full-time staff of two, one part-time employee, and an office in Toronto. The annual budget is about $150 000, of which $30 000 is provided as a grant from the Minister of Natural Resources and the $120 000 balance is obtained from fees, donations, and projects.

The work and various programs of the OFA have focused on education. The association has been particularly successful in doing this in cooperation with other institutions and agencies as well as its own separate programs.

Active in forest fire prevention education, the OFA annually provides material to the media, MNR, schools, libraries, and other institutions. It has worked with universities in organizing courses on topics, such as natural resource management, and for several years has cooperated with the University of Toronto School of Continuing Studies in a woodlot management course.

The tree farm movement is of great importance to the association, which has given support and encouragement to both individuals and government agencies involved in private land forests. Nearly 1000 of its members own tree farms, making it the largest organization in Ontario representing tree farmers. It has also been active in submitting briefs to the Government on matters such as property taxation that relate to private land forests.

For 25 years, the OFA has been involved with the Dryden High School conservation course, forestry teaching in Ontario Schools, the revision of environmental science course guidelines, and the curriculum guidance committee of the Science Teachers Association of Ontario. Of more general public interest is the maintaining of an honour roll of Ontario trees and a proposal for a provincial tree.

Huronia Woodlot Owners Association [HWOA]

The HWOA is a non-profit organization with about 100 members. Its objectives are to promote better plantation and woodland management and to assist in the dissemination of ideas and information on woodland management.

Funding is derived from a $5 annual membership fee, and six meetings are held a year. MNR staff provide both technical and administrative assistance at the district level.

Lanark Forest Cooperative

The cooperative was formed in 1950 to serve as a marketing agency for its 100 members. It was funded entirely by both membership dues and a fee set by the cooperative against forest products which were marketed. Although not formally dissolved, the cooperative has been inactive since 1975.

Christmas Tree Growers Association of Ontario

In 1955, a small number of Christmas tree growers formed an association, the Yule Tree Farmers of Ontario. At an annual meeting in 1961, the name was changed to the Christmas Tree Growers Association of Ontario. Operating on a province-wide basis, it has just over 100 members; each member pays a fee of $25 per year.

The association's objective is to provide, through cooperative effort and exchange of experience, practical solutions for problems concerning the production and marketing of Ontario-grown Christmas trees. It employs a consulting manager full time; and since 1980, annually receives a grant of $ 30 000 from the Ministry of Natural Resources. This grant is available for a period of up to five years and is used to promote the production of improved Christmas trees by the grower.

Although there are three private nurseries producing seedlings for Christmas tree plantations, most of the seedlings come from MNR nurseries. The major species used is Scots pine, and although the designation of use for Christmas trees in MNR application forms for nursery stock was not required until 1980, it can be assumed that this species was the one mainly used. During the 20-year period 1948-68, MNR distributed 83.447 million Scots pine. In 1981, the association undertook a survey of Scots pine and spruce seedlings, in orders of 1000 trees or more, that were distributed from the four southern Ontario nurseries; the data are given in Table 33.

The small number of trees planted in the mid-1970s will undoubtedly be reflected in a limited supply to the market in the mid-1980s, and thus will provide increased opportunities for trees to move into Ontario from surrounding jurisdictions.

TABLE 33

DISTRIBUTION OF SEEDLINGS 1975-81

[In orders of 1000 or more trees
from four southern Ontario MNR nurseries]

Year	Scots Pine	Spruce
1975	471 000	160 000
1976	329 000	84 000
1977	706 000	130 000
1978	616 000	232 000
1979	1 101 000	518 000
1980	1 230 000	508 000
1981	1 150 000	330 000
Total seedlings	5 603 000	1 962 000

Traditionally, Canada has exported Christmas trees primarily to the United States; the main species being balsam fir from the east coast and Douglas fir from the west coast. Canadian exports rose to a maximum of about 12 million trees per year in the mid-1950s, but have declined to about two million annually since 1974. The decline of exported trees to the U.S. is due to two factors: one is a general decrease in the use of Christmas trees or substitution of artificial for natural trees; the other is the development of Christmas tree plantations in the United States.

The Maple Syrup Industry and the Ontario Maple Syrup Producers Association [OMSPA]

The maple syrup and sugar industry is historic and unique to eastern North America, therefore, a brief review of its development would be appropriate.

In the early days of settlement, maple sugar was a staple food product as cane sugar was expensive and not always readily available in rural Ontario. In 1851, 1 666 180 kg (3.67 million pounds) of maple sugar were produced and 10 years later, this had nearly doubled to 3 164 380 kg (6.97 million pounds). It has been estimated that at that time Upper Canada [Ontario] produced half of all the maple sugar produced in Canada. After 1871, however, production decreased, until by 1901 it was at 1 775 140 kg (3.91 million pounds).

During the early 1900s, two factors had a profound effect on the production of maple sugar. The first was the large-scale use of new equipment, such as flue evaporators that were developed in the late 1800s.

This equipment replaced the older wood equipment, kettles and flat pans, and enabled the production of maple sugar and syrup to become a higher and more uniform quality. A second factor was the shift from maple sugar to maple syrup production, reflecting the general availability and use of cane sugar. Ontario's production of maple syrup was at a maximum in 1926 when 3 536 788 ℓ (778 000 gallons) of syrup and 307 358 kg (677 000 pounds) of sugar were produced.

Since 1945 there have been many technical innovations and developments in equipment such as oil-fired evaporators, preheater hoods, reverse osmosis machines, and the replacement of metal buckets with plastic tubing and vacuum systems for gathering sap. Furthermore, research has demonstrated that improved methods of tapping as well as new silvicultural practices to improve sugar bush management, are now readily available. Yet, despite these technical improvements and new management practices, the production of maple syrup has steadily declined [Fig. 7]. This is the result of a reduction in the number of commercial producers in Ontario. Maple producers, numbering 6257, in 1951, fell to 1536 by 1971. During the past decade this number has not changed significantly.

In 1980, Canada produced 11.460 million ℓ (2.521 million gallons) of syrup [including syrup equivalent for maple sugar and taffy production]. While this constituted nearly 70% of the total world production, Ontario's contribution to Canada's production was only 4.1%. By far the largest single producer in Canada is Quebec. The production and farm value of maple products in Ontario is given for five-year intervals from 1930 to 1980 in Table 34. It has been estimated that in Ontario as much as 95% of the maple syrup production is disposed of by "farm gate" sales, i.e. sold by the producer on site.

TABLE 34

ONTARIO MAPLE PRODUCTS AND THEIR FARM VALUE

[At five year intervals from 1930-80]

	Maple Syrup			Maple Sugar			All Maple Products
Year	Litres (Gallons)	Value of Syrup in Millions of 1980 Dollars	Value of Syrup per Litre in 1980 Dollars	Kilograms (Pounds)	Value of Sugar in Millions of 1980 Dollars	Value of Sugar per Kilogram in 1980 Dollars	Total Value of Products in Millions of 1980 Dollars
1930	2 913 986 (641 000)	$8.090	$2.78	218 828 (482 000)	$0.673	$3.08	$8.763
1935	2 936 716 (646 000)	5.921	2.02	254 694 (561 000)	0.528	2.07	6.449
1940	2 359 374 (519 000)	4.609	1.95	22 700 (50 000)	0.061	2.69	4.670
1945	559 158 (123 000)	2.055	3.68	3 178 (7 000)	0.011	3.46	2.066
1950	2 304 822 (507 000)	8.356	3.63	14 982 (33 000)	0.053	3.54	8.409
1955	986 482 (217 000)	3.324	3.37	5 448 (12 000)	0.021	3.85	3.345
1960	1 136 500 (250 000)	4.023	3.54	5 902 (13 000)	0.025	4.24	4.048
1965	850 102 (187 000)	2.942	3.46	4 540 (10 000)	0.022	4.84	2.964
1970	827 372 (182 000)	2.859	3.46	7 718 (17 000)	0.046	5.96	2 905
1975	545 520 (120 000)	2.184	4.00	4 086 (9 000)	0.030	7.34	2.214
1980	468 238 (103 000)	2.020	4.31	3 632 (8 000)	0.024	6.61	2.044

* Source: Statistics Canada

Although the annual production in Ontario has varied, 454 600 ℓ to 902 200 ℓ (100 000 to 200 000 gallons) of syrup represent the range of present yield. It is estimated that Ontario imports approximately two-thirds of the maple syrup used in the province. If this is so, then there is a definite opportunity for Ontario producers to increase production to capture more of the provincial market.

Since maple syrup is largely produced as a supplement to other farm operations, a general decline in the number of farms has undoubtedly contributed to the reduction in maple producers. High costs of capitalization, higher labour costs, and the seasonal nature of the activity have also contributed.

The Ontario Maple Syrup Producers Association was formed as recently as 1967. It was the result of a recognition by producers, the Ministry of of Agriculture and Food, and the Ministry of Natural Resources that there was a need to improve maple production and quality, and at the same time mske it a more viable operation financially. Figure 7 and Table 34 show that over a period of five decades, the per unit price has remained essentially constant [influenced only by inflation]. Thus, the total farm value of maple products has fallen in direct relation to the fall in the level of production.

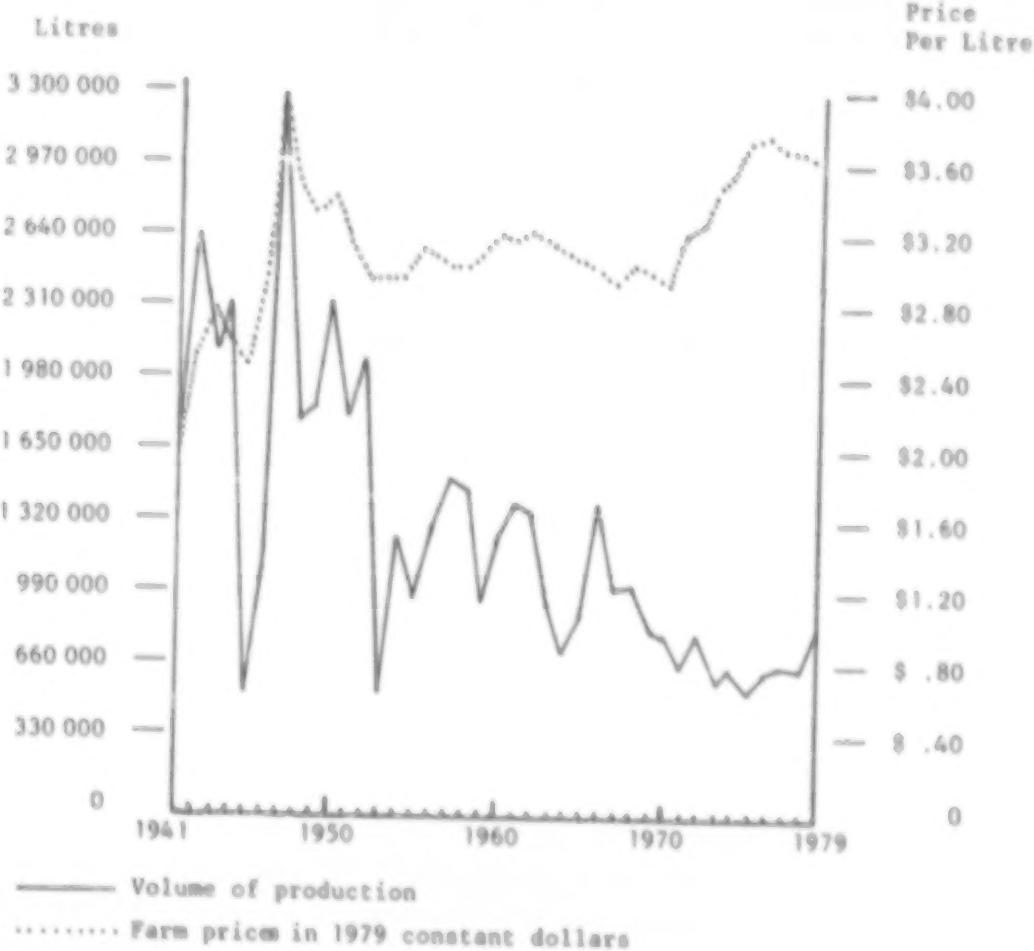

Figure 7. Volume of production and farm prices for Ontario maple syrup 1941-71

MNR support for maple syrup producers comes through assistance and advice from either advisory services or the Woodlands Improvement Program for the agreement holder. A regional forestry specialist in the Eastern Region, located at Kemptville, serves also as a maple sugar bush management specialist part-time. Private producers can make use of sugar bushes on Crown or agreement forest lands by the rental of taps. This is under the authority of the Public Lands Act and a producer obtains a land use permit on an annual basis. The minimum rental is 5¢ per tap for each order.

Since 1967, the Ministry of Agriculture and Food has had a full-time maple syrup specialist on staff. This person acts as a secretary for OMSPA maintaining records and providing general staff assistance. Since 1971, MAF has operated a sugar bush for research and educational purposes at Kemptville College of Agricultural Technology. In addition, it makes an annual grant of $3000 to OMSPA, which operates under a MAF charter [1970]. There is an annual membership fee of $10 and the membership is now 650. A newsletter is issued bimonthly and members also receive the National Maple Digest. The association is structured into 11 geographic districts and the board of directors comprises two persons from each district. The objective is to develop, expand, and improve the maple syrup industry in Ontario, for which there is considerable opportunity. This appears to be particularly relevant if maple syrup production, which can be an important source of cash flow, is viewed as a complementary seasonal operation that does not conflict with most other farm activities.

VII. FORESTRY AND AGRICULTURE

The relationship between agriculture and forestry in Canada has been of less consequence than that generally found in other countries. This may seem strange, initially, but is related primarily to the difference in land ownership pattern, which existed in the early days of settlement and has persisted largely to the present. This is the predominant ownership [91%] in Canada of productive forest lands by the provincial and federal Governments.

The value of all forest products in 1980 was $27.5 billion, greatly exceeding the farm value of $15 billion for agricultural products. Agriculture Canada, however, has recently forecast that the nation has the capacity to increase food production so that by the year 2000 the value of agricultural products could grow to $35 billion in 1981 dollars.

In considering crop values, the fact that a substantial area of private forest lands in Canada is owned by farmers is important. The 1976 Census of Canada reported that there is 39 825 km^2 (9.84 million acres) of woodlands on census farms. This is 17.5% of the area of private forest lands in Canada. Significant amounts of farm income in 1980 were derived from forest products as shown in Table 35.

TABLE 35

1980 FARM INCOMES AND FARM INCOME IN KIND*§

Province	Value of Forest Products Used on the Farm [$ Millions]	Cash Receipts From Forest Products [$ Millions]	Total Value of Forest Products Produced and Used on Farms [$ Millions]	Provincial Farm Incomes as a Percentage of Total Incomes
British Columbia	$ 0.672	$ 2.651	$ 3.323	2.6
Alberta	2.650	0.980	3.630	2.8
Saskatchewan	2.694	0.333	3.027	2.3
Manitoba	1.276	0.280	1.556	1.2
Ontario	12.684	13.752	26.436	20.5
Quebec	24.021	55.501	79.522	61.6
New Brunswick	0.984	4.093	5.077	3.9
Nova Scotia	1.735	3.586	5.321	4.1
Prince Edward Island	0.847	0.363	1.210	1.0
Total	$47.563	$81.539	$129.102	100.0

* Farm income in kind relates to the value of forest products harvested and used on the farm.

§ Source: Statistics Canada.

Approximately two-thirds [$81 539 000] of the income is in cash receipts, while about one-third is the value of products used on the farm. Quebec and Ontario account for over 80% of the farm income derived from forest products. These proportions may obscure the fact that in provinces such as New Brunswick, Nova Scotia, and Prince Edward Island where the incomes may be a small proportion of the Canadian total, these incomes may be significant at the provincial levels.

Ontario farm incomes in kind from forest products, excluding maple syrup, for the period 1971-80 are given in Table 36 and are related to the total income in kind from all farm products.

TABLE 36

ONTARIO FARM INCOME IN KIND FROM FOREST PRODUCTS*
1971-80

Year	Farm Income in Kind From Forest Products [$ Millions]§	Total Income in Kind From Farm Products [$Millions]	Farm Income in Kind From Forest Products as a Percentage of All Farm Products
1971	$4.595	$29.305	15.7
1972	5.126	30.997	16.5
1973	6.903	43.584	15.8
1974	7.258	42.763	16.9
1975	7.366	43.587	16.9
1976	8.751	43.552	20.1
1977	8.808	45.445	19.4
1978	10.481	57.858	18.1
1979	13.575	72.133	18.8
1980	12.684	70.657	17.9

* Source: Statistics Canada

§ This does not include maple syrup.

During the ten-year period, farm income in kind from forest products has been between 15% and 20% of the income in kind from all farm products. In other words, forest products represent a significant value of products consumed or used on the farm. There is reason to believe that these values of forest products are minimal because since the 1970s there has been an increased quantity of fuelwood cut and consumed by Ontario farmers, and this is not reflected in an increase in the proportion of value contributed by forest products since 1976.

Table 37 gives the values of forest products for both those used on the farm and those which bring cash income, and relates them to total farm cash receipts. As might be expected, the total value of forest products forms a very small proportion of the total farm receipts [0.3% to 0.4%]. The value of forest products is therefore significant because it provides materials and receipts that are complementary to the maintenance of an individual farmer's capability for food production, rather than being an appreciable part of the source of overall farm income.

TABLE 37

ONTARIO FARM INCOME FROM FOREST PRODUCTS 1971-80*

Year	Value of Forest Products Used on the Farm [$Millions][§]	Cash Receipts From Forest Products [$Millions][#]	Total Value of Forest Products Produced and Used on Ontario Farms [$Millions]	Total Cash Receipts From Farm Products [$Billions]	Forest Products Cash Receipts as a Percentage of Total Cash Receipts
1971	$4.595	$5.244	$9.839	$1.417 938	0.4
1972	5.126	6.069	11.195	1.655 707	0.4
1973	6.903	7.426	14.329	2.059 662	0.4
1974	7.258	8.099	15.357	2.517 681	0.3
1975	7.366	8.256	15.622	2.696 311	0.3
1976	8.751	9.853	18.604	2.791 900	0.4
1977	8.808	10.167	18.975	2.865 736	0.4
1978	10.481	12.995	23.476	3.417 018	0.4
1979	13.575	15.534	29.109	4.022 342	0.4
1980	12.684	13.752	26.436	4.326 190	0.3
Total	$85.547	$97.395	$182.942	$27.770 485	

* Source: Statistics Canada

§ Does not include maple products.

# Includes cash receipts for maple products.

Harvesting of forest products for use on the farm is done, for the most part, by the farmer. Therefore, efforts to improve the management of woodlots, as well as to increase efficiency of forest products use and thus their value, must focus to a great degree on the farmer.

During the past two decades, if not longer, there has been a trend in agriculture towards increasing specialization. This has most probably increased the degree to which farmers have neglected or mismanaged the forested areas of their productive lands. Certainly, from the agricultural standpoint of crop production, no incentives have been provided for forest management. For example, the Minister for Agriculture and Food is responsible for agencies such as the Agricultural Stabilization Board, the Canadian Dairy Commission, the Canadian Grain Commission, the Canadian Livestock Feed Board, the Farm Credit Corporation, and the National Farm Products Marketing Council. Farmers and others producing forest crops do not obtain support as they do for many agricultural crops; nor at the national level is there any strategy or policy directed towards private forest lands as there is for agricultural lands.

One of the most important aspects of agriculture in Canada has been the development of education, research, and extension programs directed towards the improvement of agricultural practices. MAF presently has 54 agricultural representatives who work out of field offices, for the most part on a county basis. The agricultural representatives have about 60 assistants and associates; a further nine area coordinators provide farm management guidance to farmers. There are 60 extension specialists who provide field advisory service to farmers in areas such as beef and dairy farming, engineering, horticulture, and so on. They may work with farmers on an individual basis or with farm groups such as the Soil and Crop Improvement Association. One of the specialists deals with maple syrup production.

An important aspect of both research and education is the role that the Ontario Agricultural College and the University of Guelph play in conjunction with MAF. The univeristy extension program is large, and in-service training and educational programs for farmers are a major responsibility. In addition to the Guelph programs, MAF maintains five other colleges of agricultural technology. These colleges offer a two-year program for young people who plan to be farmers. There is no full-time instructor to train student farmers in the basic principles of woodlot management at any of these colleges. From time to time, foresters from MNR have given parts or all of a forestry course at one or another of the colleges, but the arrangement has usually been less than satisfactory because of lack of continuity and conflicting work priorities.

VIII. PRIVATE LAND FORESTRY IN CANADA

In Canada, there are an estimated half a million private forest owners including both individual private landowners and large corporations. Their woodlands occupy 9% of the total forest land or just over 226 800 km^2 (56 million acres); the remainder is owned by the provincial and federal Governments. Canada's total forest area, including the Northwest Territories and the Yukon, is 3 232 957 km^2 (798.261 million acres) of which about 2 243 700 km^2 (554 million acres) are considered productive. Approximately 82% of the private forests are situated in eastern Ontario, Quebec, and the Atlantic Provinces.

Ontario's private land forests, which comprise 10% of the total area of productive forest land in the province, are 18.5% of the total private land forest in Canada. A very large proportion of private forests in Canada are located in areas where the infrastructures of communities and access are already present. This reflects both the relationship of private forests to the pattern of settlement and the fact that large tracts of lands were granted to railways as an incentive to the development of the country.

It has been estimated that private woodlands produce as much as 30% of the industrial wood used; yet in general these private woodlands have, to a large degree, been overcut and poorly managed. The brief accounts which follow, illustrate that in several provinces there has been an increasing interest in and support for private land forests during the past few years. An attempt has been made to determine the overall level of funding for private land forests and the amounts, which must be considered approximate, are given in Table 38.

In 1980, 62.8 million trees were produced in government nurseries in the provinces for distribution to private landowners, and this amount increased to 69.8 million in 1981. Ontario and Quebec accounted for the largest number, providing 25 million trees each.

TABLE 38

PRIVATE FOREST OWNERSHIP IN CANADA BY PROVINCE*

Province	Private Forest Land in Square Kilometres (Acres)	Total Forest Land in Square Kilometres (Acres)	Private Forest Land as a Percentage of Total Forest Land
British Columbia	25 620 (6 326 000)	545 341 (134 652 000)	5
Alberta	7 525 (1 858 000)	276 781 (68 341 000)	3
Saskatchewan	4 022 (993 000)	128 296 (31 678 000)	3
Manitoba	2 673 (660 000)	135 578 (33 476 000)	2
Ontario	41 966 (10 362 000)	432 564 (106 806 000)	10
Quebec	72 365 (17 868 000)	696 592 (171 998 000)	10
New Brunswick	33 676 (8 315 000)	63 156 (15 594 000)	53
Nova Scotia	32 092 (7 924 000)	44 477 (10 982 000)	72
Prince Edward Island	2 365 (584 000)	2 507 (619 000)	94
Newfoundland	4 982 (1 230 000)	39 953 (9 865 000)	13
Labrador	-	87 638 (21 639 000)	-
Total	227 286 (56 120 000)	2 452 883 (605 650 000)	9

* Source: Canadian Forestry Statistics, revised 1974, Statistics Canada.

Table 39 shows that approximately $46 million is currently being spent on an annual basis or about $2.05/ha (83¢/acre) of private woodland in Canada. These expenditures do not include amounts spent by the owners themselves, and therefore may be significantly lower in certain provinces than the total expenditures by government and private sector.

TABLE 39

ESTIMATED EXPENDITURES ON PRIVATE LAND FORESTS AND FORESTRY BY PROVINCE 1980-81

[Federal and provincial funds are combined]

Province	Expenditures [$ Millions]
Alberta [Shelterbelt Program]	$ 2.10
Saskatchewan Manitoba [Prairie Farm Rehabilitation Administration]	1.63
Ontario	7.44
Quebec	21.06
New Brunswick	3.60
Nova Scotia	8.20
Prince Edward Island	2.25
Total expenditures	$46.28

British Columbia

Small private woodlands in British Columbia are 4% of the province's productive forest land and occupy 1.6 million ha (3 953 600 acres). These private woodlands are being heavily overcut; and once the old growth forests are removed, new young stands requiring management take their place. Large private holdings and Crown lands, combined with private land in sustained-yield management units, constitute the major areas of forest management effort in private forestry.

Private land forests can be considered under four categories: Taxation Tree Farms, tree farm licenses, woodlot licenses, and a new small woodland owner extension proposal.

Taxation Tree Farms:

Taxation Tree Farms were authorized in 1951; and in return for a commitment to practice forest management in a government-approved manner, the landowner is afforded a lower effective property tax. Administration is done by the British Columbia Assessment Authority, with management and working plans approved by the chief forester of the Ministry of Forest.

In 1980, there were 734 759 ha (1 815 589 acres) of land certified as Taxation Tree Farms. Of this, 170 883 ha (422 252 acres) were included within tree farm licenses. Although effective rates of taxation remain similar to those for other properties, the valuation method is an income approach based on the predictions of future harvests. No value is attributed to the land itself. In contrast, other classes of privately held forest land are valued on the basis of the total market value of all currently merchantable timber; the land itself is additive.

In order to qualify as a Taxation Tree Farm, an owner must obtain from the Ministry of Forests a certificate stating that the best economic use of the land is to provide a forest crop, and that there is a plan for forest management which meets with the Minister's approval. Each year the owner is required to make a return showing what planting, tending, protecting and harvesting have been carried out. This return, along with field inspections, is used to check adherence to the plan of forest management. Lack of adherence to the plan may be cause for cancellation of the certificate. In such case, the assessor must reclassify the land and issue a supplementary assessment for that year. There is no provision for a recovery of taxes beyond this one year. Assessment is done annually.

TABLE 40

ASSESSED VALUES AND RATES OF TAXATION FOR PRIVATE FOREST LANDS [1981]

Type of Land	Assessed Value as a Percentage of the Actual Value	Rate of Taxation as a Percentage of the Assessed Value
Tree farm land	60	1
Timber land	30	1.5
Wild land	30	3

Tree Farm License:

A tree farm license is primarily a crown land tenure under which management responsibilities are shared between the government and the forest industry. In return for managing an area of land to approved standards, a company receives sole rights to harvest the timber. Private lands owned by the licensee can be included under the tree farm license agreement. As of 1981, there were 34 tree farm licenses in the province with a total area of 8 824 124 ha (21 804 410 acres). Private land only comprises 3.5% of the productive forest land within these tree farm license areas, and almost all this private land has also been certified as taxation tree farms. Tree farm licenses are issued for an agreement period of 25 years. Before an agreement is made, the chief forester of the province must approve management and working plans for the proposed tree farm license area. Financial assistance is available to tree farm licensees as a credit to stumpage under the Forests Act [1978].

Woodlot License:

The woodlot license is another form of Crown tenure that can include private lands. An owner may choose to combine private holdings with a maximum of 400 ha (988 acres) of Crown land to form a combined management unit. The objective of the new woodlot license program is to have a minimum of 1% of the provincial allowable annual cut, exclusive of tree farm licenses, set aside for this program. Woodlot licenses are issued for a term not exceeding 15 years. Licenses are granted to individuals, societies, and a band as defined in the Indian Act. Woodlot licenses will not be entered into with a person, corporation, band, or society that owns or controls a corporation owning a timber processing facility in the province. Management and working plans must be approved by the Crown before a woodlot license is granted.

So far, no woodlot licenses have been issued in the new program. Currently, there are about 5732 ha (14 164 acres) of forest land under an old agreement entitled Farm Woodlot Licenses. Of this total, 704 ha (1740 acres) are private land.

Small Woodland Owner Extension Proposal:

The Ministry of Forests is currently proposing an extension type program to improve management on private woodlands. If this private forestry program is initiated, it will also provide extension services for owners of smaller Taxation Tree Farms and operations on lands under license.

Section 65 of the Forests Act [1978] states that no person shall remove timber from Crown or private lands unless he obtains a certificate. Data on the amount of timber by volume and species together with its origin must then be provided to the Ministry of Forests. British Columbia is one of the few provinces which has comprehensive information on the wood cut from private lands.

Alberta

In Alberta, commercial forest harvesting is carried out almost exclusively on Crown land. As a result, there is no private land being managed for continuous supply of wood, and no private forest owner assistance programs are being offered through the Department of Energy and Natural Resources. However, a small amount of wood is removed from private land during clearing for farm land.

The Alberta Department of Agriculture operates a provincial tree nursery near Edmonton, that provides stock for shelterbelt plantings, farm woodlots, and Christmas tree plantings. Stock from the nursery is also supplied to provincial parks and for townsite beautification. In 1979, a total of 2 146 230 trees and shrubs were shipped in 7546 orders. Nursery stock for shelterbelts and windbreaks is provided free of charge. For Christmas tree stock, the charge is $20 per thousand f.o.b. [free on board] at the nursery. Government staff provide advice on shelterbelts and farmstead landscaping as well as short courses on shelterbelt renovation.

Saskatchewan

Private land forestry in Saskatchewan is not prominent and no records or reports are available on any activities that take place on private woodlands. Only 3% of the province's forest land is privately owned. During the 1940s and '50s, the Canadian Forestry Association stimulated interest in forest conservation in rural areas. Later, the Department of Natural Resources undertook a forest extension program with farmers who had forests on their land, but by 1962 the program was discontinued.

The federal government nurseries in Saskatchewan, at Sutherland and Indian Head, have produced trees and shrubs for shelterbelt plantings primarily for farmstead, soil and crop protection. The nursery at Sutherland was closed in 1966, but the one at Indian Head is still in production. [The Indian Head nursery, which was established in 1902 by the Forestry Branch of the Department of the Interior, is one of the oldest tree nurseries in Canada.] The shelterbelt program expanded quickly; and by 1906, two million trees and shrubs, consisting mainly of deciduous species such as Manitoba maple, green ash and American elm, were produced. Later, caragana and other species including some conifers came into production. Although activity in shelterbelt planting has varied, it did increase considerably in the 1930s and '40s. After 1950, little shelterbelt planting took place until the mid-1970s when new extensive plantings were made.

One of the lessons learned early on was that to be effective, shelterbelts must be planned, organized, and maintained in a coherent way. The largest single-field shelterbelt in North America is located in the Conquest area of Saskatchewan and was established in 1935. At that time, a field shelterbelt association was formed and an annual allowance of $19.32/km ($15/mile) of shelterbelt was paid over the next five years. When the project was completed in 1961, there were nearly 1600 km (1000 miles) of shelterbelt protecting 705 km^2 (174 000 acres) of farm land.

The Indian Head nursery is part of the Soil and Water Conservation Branch of the Prairie Farm Rehabilitation Administration [PFRA]. In 1979, 4.7 million seedlings and transplants were distributed; of these 61% were used in Saskatchewan, 35% in Manitoba, and 4% in Alberta. Nearly half of the stock grown is caragana. In 1981, nursery stock distribution increased to 6.6 million seedlings and transplants.

Manitoba

Private forest lands occupy 267 300 ha (660 000 acres). The private land forestry program is relatively small and at present mainly limited to the planting of conifers on tree farms or woodlots. For several years, the provincial tree nursery supplied stock for shelterbelt planting and other non-commercial and conservation projects at the community and municipal levels. Because of duplication with the PFRA program, the provincial program was discontinued in 1973.

Landowners in Manitoba can purchase planting stock for tree farm use from the provincial tree nursery at Hadashville. An owner is charged $25 per thousand trees and the minimum order is one thousand trees. Since 1973, just over one million trees, the majority of which are Scots pine and white spruce, have been distributed. In 1981, a total of 167 000 trees were shipped, a portion of which was used for Christmas tree production.

Quebec

According to provincial statistics, there are 70 912 km^2 (17 522 355 acres) of private land forests comprising approximately 10% of the forest area of Quebec. The distribution of forest ownership is shown in Table 41. These privately owned forests annually produce about 5 664 000 m^3 (2 million cunits) or 25% of the industrial wood used. In addition, they yield over 10 228 500 ℓ (2.25 million gallons) of maple syrup, 158 900 kg (350 000 pounds) of maple sugar, and one to one-and-a-half million Christmas trees. It is estimated that current revenues generated by private land forests are about $112 million annually.

There are 125 000 owners of forests less than 810 ha (2000 acres), and 85% of these forests are less than 122 ha (300 acres) in size. Only 185 owners have properties greater than 810 ha (2000 acres). The largest single owner group is farmers and they constitute 41%.

Quebec's private land forestry assistance and incentive programs are the most comprehensive in Canada. They are administered largely by the lands and forest sector of the Québec Ministère de l'Energie et des Ressources and implemented mainly through two main organizations — the Fédération des Producteurs de Bois du Québec [Quebec Federation of Wood Producers] and the Groupements Forestier [Forest Owner Groups].

TABLE 41

DISTRIBUTION OF QUEBEC FORESTS WITH COMMERCIAL POTENTIAL [1976]*

[According to ownership and tenure]

	Area in Square Kilometres (Acres)		
Small [less than 8.1 km^2 (2000 acres)]	59 210 (14 630 791)		
Large [more than 8.1 km^2 (2000 acres)]	11 702 (2 891 564)		
Total private forests	70 912 (17 522 355)		70 912 (17 522 355)
Provincial Jurisdiction:			
Crown forests	321 347 (79 404 844)		
Forest concessions	213 774 (52 823 555)		
Township forests	5 256 (1 298 758)		
Experimental forests	337 (83 273)		
Vacant forests	70 913 (17 522 602)		
Total provincial public forests	611 627 (151 133 032)	611 627 (151 133 032)	
Indian reserves	777 (191 997)		
Other reserves and parks	1 165 (287 871)		
Total federal public forests	1 942 (479 868)	1 942 (479 868)	
Total public forests		613 569 (151 612 900)	613 569 (151 612 900)
Total forests with commercial potential			684 481 (169 135 255)

* Source: Quebec. Ministry of Lands and Forests. Quebec Forests—A Resource, Quebec City, 1974.

Fédération des Producteurs de Bois du Québec:

The Fédération was formed in 1968 by the associations and boards of wood producers and replaced a provincial committee that had been established in 1958. In Quebec, there are 14 wood producers associations and boards responsible for administering a joint wood marketing plan under the powers conferred upon them by the Farm Products Marketing Act. They negotiate for and on behalf of all wood producers covered by a joint plan. Negotiations are generally carried out by a committee with each purchasing mill, thus bringing together representatives of several joint plans for the area that will be supplying wood to the mill.

The main function of the Fédération is to provide services to its member associations and boards in such areas as legal advice, advocacy before public bodies and officials, the development and defense of common policies, and representations at the provincial, national, and international levels. It is one of a dozen federations of specialized associations that, with the 16 regional federations of general purpose associations, form the Union des Producteurs Agricoles.

During 1979-80, the Fédération became the main spokesman in dealings with the Québec Ministère de l'Energie et des Ressources on the subject of development policy for privately owned woodlands. It was given a mandate to negotiate and sign, on behalf of the various associations and boards, the protocols of agreement governing the management of privately owned woodlands by joint management bodies. There are now 17 joint wood producers plans in operation, that are administered by 10 wood producers associations and four boards. In 1980, 6.3 million m^3 (2.2 million cunits) of wood worth almost $78 million were marketed by the Fédération for 25 567 member landowners. This is equivalent to all of the pulpwood and sawtimber purchased in Quebec that year.

In 1981, the Ministère de l'Energie et des Ressources funded approximately $12.6 million to the regions administered by the Fédération. Furthermore, in the same year, additional funds of $785 000 for inventory, $150 000 for management plans, and $90 000 for Fédération expenses were supplied by the provincial government. The government also supplied 13.7 million trees to the Groupements Forestier for planting.

Groupements Forestier:

In 1972, a program was set up to combine small private holdings into larger management units. Each group is an association of owners who pool their resources to form a profit-oriented commercial company with shares. The business operations of the company are managed by a board of directors composed of forest owner shareholders. Each landowner, who joins a Groupement Forestier, signs an agreement for 15 years and has the right to purchase one share in the company per $1000 of the value of his property. By 1981, there were 44 Groupements in operation consisting of 7689 members who owned 378 600 ha (935 521 acres) of private forest land. The basic objectives of the forest owner groups are to ensure the intensive management and optimum development of private woodlands and to act as a stabilizing factor in rural areas. The Groupements may also lease Crown land for forest management purposes.

Each of these associations or companies manages a territory called a management unit. Potentially, there are 55 of these units in Quebec. Each unit comprises a forested area of between 777 km^2 and 2590 km^2 (300 and 1000 square miles).

Through the Groupements, technical forestry advice and training are available. Members are paid to work on their own property in approved forestry operations. Owners receive, in addition to payment for their work, one-third of the selling price of wood produced from their property and are eligible for the normal fringe benefits of industrial workers. Work carried out by the Groupements includes reforestation, stand improvement, harvesting, and the utilization of private forest resources for maple syrup production, Christmas trees, essential oils, recreation, lumber operations, marketing, and the operation of processing plants. The groups may also obtain forest credit loans to buy machinery and woodlots as well as to construct access roads.

Private Land Forest Assistance:

Financial assistance to private land forest owners in Quebec has increased dramatically since the early 1970s. For example, the private land forestry budget increased tenfold from $1 million in 1971-72 to $10.1 million in 1977-78 when it constituted 10% of the total budget of the then Quebec Department of Lands and Forests. In 1980-81, the total private land forestry budget was $21 million. Of this amount, $11.87 million was provided as aid to owner associations and boards, and related forestry support. Each year the Ministère de l'Energie et des Ressources organizes a competition for woodlot owners on aspects of woodlot management. Winners receive medals and cash prizes ranging from $500 to more than $1000. In 1980, 27 owners received regional awards and three provincial awards. The competition's annual cost is about $30 000.

In addition to direct financial, professional, and technical assistance to associations and boards, a forestry credit program was established in 1976.

This credit or loan program is administered by the Office du Crédit Agricole du Québec [Quebec Agricultural Credit Bureau]. Loans are made for medium or long terms and are provided by the Office from funds that it, in turn, borrows from private financial institutions. The Office also supports certain medium-term loans that an owner obtains directly from banks or credit unions. In 1981, 3070 loans were active for a total of $36.8 million, including $19.9 million in mortage loans. For all types of loans, the borrower must declare that the forest property to which the loans apply is managed according to the provisions of an official management plan. Long-term loans may be obtained by forest owners and associations in order to manage or purchase a private forest, or to consolidate debts contracted for one of these purposes. A loan of up to 90% of the value of the forest may not exceed the amount of $40 000 for an individual borrower and $500 000 for a corporation. The maximum term of a loan is 60 years.

Medium-term credit loans are provided for a variety of purposes including improvement of a private forest; purchase of a private forest; consolidation of debts contracted for one or another of the above purposes; purchase or repair of forest machinery, equipment or implements; purchase or improvement of maple bush equipment and supplies; forest protection expenses and purchases; construction or improvement of buildings; purchase of forest seeds and plants; and stand improvement. The amount of the loan provided by the Office du Crédit Agricole in this case may not exceed 70% of the value of the goods secured, or may be up to $25 000 for an individual borrower and $100 000 for a corporation. The maximum term for these loans is 15 years.

For both medium and long-term loans made by the Office, the interest rate is equal to the prime lending rate of the chartered banks plus one half of one per cent adjusted twice a year, and reduced by the equivalent of 5% if the borrower, no later than April 30th each year, makes a solemn declaration to the Office that he has complied with the provisions of the management plan. The interest subsidy may not be for a period of more than 15 years.

Medium-term loans, obtained by an owner or association directly from a financial institution, are subject to the same general conditions and terms as a medium-term loan from the Office du Crédit Agricole; except that for loans of $8000 or less, it is not necessary for the forest to be placed under a management plan. The extent of loans is given in Table 42.

TABLE 42

FORESTRY CREDIT IN QUEBEC 1976-81

	1976-77	1977-78	1978-79	1979-80	1980-81
Mortgage Loans					
Applications received	246	354	507	838	439
Loans in force	60	271	603	1 132	1 279
Amount of loans	$959 500	$4 469 600	$8 787 500	$17 734 200	$19 869 900
Interest subsidy	$23 300	$127 300	$460 100	$1 260 300	$1 137 600
Area under management in hectares (acres)	12 000 (29 653)	25 100 (62 023)	29 800 (73 637)	27 600 (68 201)	23 500 (58 070)
Loans on Security					
Applications received	121	349	558	995	608
Loans in force	57	272	684	1 382	1 792
Amount of loans	$468 700	$1 899 800	$5 307 600	$12 587 600	$16 913 700
Interest subsidy	$500	$19 100	$80 800	$218 100	$484 800
Area under management in hectares (acres)	1 000 (2 471)	2 100 (5 189)	4 800 (11 861)	10 900 (26 934)	4 400 (10 873)

Nursery stock produced in government nurseries has been available to landowners since the early 1900s. Stock is provided free of charge to landowners owning a minimum of 0.4 ha (1 acre) of land requiring reforestation. In 1981, 25 million seedlings and transplants were distributed to the private sector and this is to increase to 40 million by 1984. Nursery stock is supplied for planting non-agricultural lands, replanting cutover or burned-over areas, erosion control, windbreaks, and Christmas tree planting. Landowners make application indicating their interest in obtaining nursery stock. If the project appears acceptable, a government forester will visit the site with the landowner to decide on tree species, number, the kind of site preparation needed, and other details. If the project is approved, the landowner will be given the required trees. For planting jobs of 5000 trees or more, planting machines are loaned by the government to landowners.

Land Zoning and Property Taxes:

In 1978, an act provided for the establishment of designated agricultural regions in Quebec. A committee administers the act and it is not possible to change land from agricultural to another use in a designated area without permission from the committee. Since maple syrup production is considered an agricultural activity, sugar maple bushes are subject to the act. Further, any tree planting on agricultural land requires authorization from the committee since it constitutes a change in land use.

Municipal property taxes for woodlots are limited to no more than 1% of the assessed value. Also, depending on the nature of the operation, municipal and school tax deductions are available to woodlot owners. In certain situations where 741 trees or more per hectare (300 trees or more per acre) are planted, the assessed value may be frozen for 30 years, and following that period may be changed only at 10-year intervals. An owner who operates a woodlot in a designated agricultural zone and who sells over $1000 worth of products annually may recover 70% of his municipal and school taxes. A similar owner in a non-designated area may recover only 40%.

Protection:

Detection of fires on private forest lands is the responsibility of the Québec Ministère de l'Energie et des Ressources, and the expenses of fire suppression on areas of less than 810 ha (2000 acres) are borne by government. On larger properties, the government pays half of the costs of fire control.

Prince Edward Island

More than 90% of the province's lands are privately owned, and 43% of the land area is classed as woodland. About 96 876 ha (239 200 acres) are considered productive forest lands.

Forest management assistance to landowners is provided under the Forest Resource Management Incentive Program [FRMIP], which began in 1980. The objectives of this program are twofold: first, to increase the quality and quantity of homestead forest products and thus increase the financial return to the owner; and second, to improve management so that the woodland resource is not exploited in a manner detrimental to the local environment or forest industries.

All owners of woodlands 10 ha (25 acres) or greater are eligible for the program. Financial assistance is available for road construction, stand improvement, plantation establishment and maintenance, boundary line surveys, and marketing. Direct grants, given under FRMIP for actual costs of specified work, are summarized in Table 43; the work may be done either by the owner or a contractor.

Grants are reviewed annually to reflect current costs. In order to receive assistance, an owner must enter into an agreement for five years, and the agreement may be renewed by mutual consent.

Landowners with agreements are supplied with free planting stock. Other landowners must pay $50 per thousand trees. For orders of 1000 trees or more, the forest service will plant the trees free of charge. Where the number of trees is less than 1000, the landowner is responsible for planting. In 1981, approximately 900 000 trees were planted on private lands for reforestation purposes and windbreaks.

TABLE 43

GRANTS FOR WORK UNDER
THE FOREST RESOURCE MANAGEMENT INCENTIVE PROGRAM

Work	Maximum Payment
Road construction to specified standards	$600/km ($965/mile)
Culverts	$75 each
Stand improvement	$400/ha ($162/acre) [This amount may be increased if done by a contractor, in order to cover employee benefits.]
Plantation establishment:	
Site preparation	$125/ha ($50/acre)
Plantation maintenance:	
Herbicide treatment	$100/ha ($40/acre)
Cleaning	$100/ha ($40/acre)
Boundary line establishment	$720/km ($1158/mile)
Maintenance	$180/km ($ 290/mile)

The private land forestry budget for 1980-81 was approximately $2.25 million of which, excluding permanent staff salaries, 80% was provided from a Canada / Prince Edward Island Department of Regional Economic Expansion agreement.

New Brunswick

New Brunswick has a greater proportion of its land area in forest than any other province. A total of 86% or 6 318 000 ha (15.6 million acres) are forest lands of which 97% is considered productive. There are about 35 000 owners of small non-industrial forests that own 1 944 000 ha (4.8 million acres) or 29% of the forest area. Large holdings make up an additional 23%, so that private forests constitute 52% of the total forest area. The balance of 48% is owned by the Crown (federal and provincial).

Since 1976, the Forest Extension Service of the Department of Natural Resources has administered the private land forestry program. The service provides support for the management of private forest lands up to 4000 ha (9884 acres) in size, where the owner is not involved in pulp and paper manufacturing. It consists of a Fredericton-based head office with functional responsibilities, and a specially designated field staff with operational responsibilities. Each of the five field regions is staffed by one extension forester and three to five extension technicians.

There are three projects under the program. The Woodlot Owner Education and Information Project coordinates and monitors educational and informational activities aimed at the private woodland owner as a manager or operator. Course material and other educational aids are supplied and the field staff assist in arranging courses, field days, and other similar activities. The Technical Services and Assistance Project coordinates and monitors all activities and programs related to group action, fibre, Christmas tree, and maple production, which includes research and development in related subject areas. The project's main purpose is to provide technical resource information for use by the field staff when advising landowners, and to assist woodlot owners in organizing themselves into independent self-financing groups. The Support Services Project carries out all branch administrative activities and monitors all economic assistance programs channelled through the branch.

New Brunswick's two economic incentive programs available to woodlot owners are: the Private Woodlot Management Assistance Program [expires in 1984], under which the owner himself carries out the work; and the Forestry Employment Program [expires in March 31, 1982], under which the work is done by a custom crew. The latter program is monitored by the department and carried out by local woodlot owner groups.

The total annual budget for the province's private woodlot management development is about $3.6 million. It is financed under a Canada / New Brunswick Department of Regional Economic Expansion agreement, which expires in 1984. The federal / provincial cost sharing is 80 / 20, respectively. under the Private Woodlot Management Assistance Program, a forest owner of a minimum of 10 ha (25 acres) of woodland could, as of 1981-82, be provided with financial and technical assistance in one or more of the following categories:

(i) Reforestation:

This includes free technical advice; free planting machines for planting 5000 trees; planting stock provided at cost; financial subsidies of up to $175/ha ($71/acre) for site preparation, $100/ha ($40/acre) to clear areas for reforestation, $120/ha ($49/acre) for tree planting, $68/ha to $265/ha ($28 to $107/acre) for field reclamation.

(ii) Stand improvement:

This includes free technical advice; free forest management recommendations or plans; financial subsidies of $150/ha to $360/ha ($61 to $146/acre) for improving young stands, semi-commercial thinning, and conversion cuttings.

(iii) Roads:

This includes free technical assistance for road location; free road plans; financial subsidies of 50% of machinery cost to a maximum of $925 per year and $25 per culvert.

(iv) Christmas tree production:

This includes free technical and marketing assistance; financial subsidies of up to $370/ha ($150/acre) for the development of new balsam fir wild stands, $45 for each 1000 trees planted to upgrade understocked wild stands or to establish new plantations, $20 for each 1000 trees grown in transplant beds.

(v) Sugar maple stand management:

This includes free technical assistance; financial subsidies of $1 for each tap to upgrade the system, and up to $450/ha ($182/acre) to develop new stands.

It is generally considered that the financial subsidies constitute about 60% of the actual cost of each activity. The Forestry Employment Program recognizes that many landowners are unable to carry out the operational work. Landowners wanting assistance must pay 10% of the costs of the work while the province, under the Forestry Employment Program, pays 90% of the costs. The work is carried out by crews employed by and under the direction of one of the regional forest products marketing boards. They act as agents or contractors for the forestry operations.

For 1981-82, the provincial targets were 810 ha (2000 acres) of site preparation, 810 ha (2000 acres) of planting, 2430 ha (6000 acres) of stand improvement.

Provincial nurseries will provide about 1.6 million trees at cost to landowners for reforestation, and an additional 800 000 for Christmas tree production in 1982. The 1982 stock prices are listed in Table 44.

TABLE 44

1982 NURSERY STOCK PRICES

[New Brunswick Department of Natural Resources]

Species	Nursery Stock for Small Freehold Lands [Price Per Thousand Trees]	Nursery Stock for Large Freehold Lands [Price Per Thousand Trees]
Jack pine	$48	$55
Red pine	$53	$61
Spruce	$51	$58
Balsam fir	$82	$94

Since 1962, woodlot owners have organized into marketing boards or associations. An independent government agency, the Forest Products Commission, monitors these boards or associations which have the authority to negotiate prices and delivery schedules for wood from private woodlots. A forest products marketing board may be set up after a plebiscite is undertaken in the predetermined area among landowners owning a minimum of 10 ha (25 acres) of woodland. The province has provided financial assistance for the necessary field work, plebiscite, setting up of the board or association, and developing marketing plans. During the period 1976-79, a total of $669 160 was allocated for these purposes.

At present there are seven regional marketing boards. Each board is divided into districts, and each district is represented by a director to the board. In turn, each board has a representative on the board of directors of the New Brunswick Federation of Wood Producers. The regional marketing board is financed basically by a levy on the price of wood sold. Marketing fees vary from 14¢/m^3 to 34¢/m^3 (50¢ to $1.25/cord) of pulpwood and 19¢/m^3 to 25¢/m^3 ($1.00 to $1.30/MBM) for sawlogs. All negotiations are undertaken at the regional board level. In addition to marketing, the boards have interests in many areas which include administration of contracts; forest management; legislation relating to marketing, sealing, and trespass; transportation; taxation; wood export; harvesting; forest protection; training and education.

In 1981-82, the Department of Natural Resources allocated $1.3 million for forest management work to be undertaken by associations and boards under the Forestry Employment Program. The government assumes all administrative costs for such work under this program.

In addition to provincial assistance programs, several companies have some form of private landowner assistance. Fraser Company Inc. of Edmonton has demonstration woodlots on its own land, provides nursery stock at a subsidized cost of $10 per thousand seedlings, and promotes awards to woodlot owners. MacMillan Rothesay Ltd. of Saint John pays a landowner 14¢/m^3 (50¢/cord) of wood over the regular price to be used exclusively by the owner for silviculture. Valley Forest Products Ltd. and St. Anne Nakawic Pulp and Paper Company have donated $25 000 to the Carleton - Victoria Marketing Board for forest management. Georgia Pacific Corporation and St. Croix Pulpwood Ltd. have an extension forester to assist owners with forest management advice and planning.

A recent Crown Lands and Forests Act [1980] has placed emphasis on measures to maintain the supply of industrial wood from private land forests. To assist in achieving this objective, the province initiated a private woodlot resource study in late 1981. The committee undertaking this study is to make recommendations to the government on private woodlot management.

Both the University of New Brunswick and the Maritime Forest Ranger School have a full-time professional forester whose responsibilities are to develop continuing education programs, many of which are specifically directed towards private woodlot management.

Nova Scotia

Nova Scotia differs from other Canadian provinces in that nearly three-quarters of its forested land is privately owned; just over half is owned by small woodland owners.

TABLE 45

DISTRIBUTION OF OWNERSHIP

	Area in Hectares (Acres)		Percentage of Total Area	
Small private woodland	2 266 000 (5 599 286)		52	
Large private woodland [corporate]	971 000 (2 399 341)		22	
Total private woodlands	3 237 000 (7 998 627)	3 237 000 (7 998 627)	74	74
Crown forest land		1 052 000 (2 599 492)		24
Federal forest land		121 000 (298 991)		2
Total forest lands		4 410 000 (10 897 110)		100

There are about 31 000 small woodland owners with properties averaging 75 ha (185 acres) in size. During the past two decades, forest production from small woodlots has dropped from 68% of the total provincial harvest to less than 40%. In 1979, only 32% of the harvest came from small woodlots. However, 78% of the province's growing stock is on private land. According to the latest forest inventory projection, the total harvest is exceeding the annual allowable cut by about 15% in softwood while there is a small surplus in hardwood. In 1979, a survey of private ownership characteristics was conducted. This survey was a mailed questionnaire similar in design to the 1969 and 1981 Ontario Rural Private Landowner Survey Questionnaires. From the survey it was estimated that of the 30 880 small private landowners in Nova Scotia, 8000 were interested in and eligible for individual management plans. The survey also indicated that only 27% of the owners were familiar with Nova Scotia's private land forestry program; however, collectively they owned 40% of the reported forest land area. Sixty-one per cent of the owners had undertaken some type of forestry activity on their property in the past five years and most were optimistic that the level of activity would increase. Production of fuelwood is expected to be the most common forestry activity.

Nova Scotia's private land forestry program received an impetus in 1977 when the province signed a DREE subsidiary agreement with the federal Government that was jointly funded by Canada [80%] and Nova Scotia [20%]. A major objective of the agreement was to initiate and intensify forest management on private land. Its purpose is to improve the management and productivity on privately owned forest lands by providing cash incentives to owners for approved forest management operations.

There are four separate components within Nova Scotia's Private Land Forestry Assistance Program. In the first, individuals, partnerships, associations, companies, or corporations owning or controlling a minimum of 30 ha (75 acres) and not more than 2025 ha (5000 acres) are eligible to apply for the full range of assistance under this program, while owners of properties from 20 ha to 30 ha (50 to 74 acres) in size are eligible for assistance for silviculture only. The lands must be owned by the applicant or leased for a period of not less than ten years from the date of application.

The basis of the assistance program is a forest management plan. Each qualifying woodlot must be inventoried and a detailed type map produced. Silviculture recommendations for each stand are listed so that the owner knows before signing an agreement what must be done. The owner is required to sign a ten-year agreement and the province agrees to assist in the funding of the work. The owner may wish to do the work himself or hire a contractor. To receive payment, the work must conform to regulations and standards approved by the Department of Lands and Forests. Woodlot owners unable to get the work done on their own may make use of a trained work force organized and made available by the province.

In the case of sale of the property for forestry purposes, the new owner may assume the agreement without penalty to the seller. If the land is sold or converted to other uses within the ten-year period, the seller must repay the province the amount orginally received for work carried out. To date, just over 1600 small woodlot owners are in the program with a total area of 131 000 ha (323 701 acres) or about 6% of the total small woodland area in Nova Scotia. By 1981, the following work had been accomplished in the program: 12 000 ha (29 652 acres) of woodlands had received silvicultural treatments, 600 km (373 miles) of roads had been built, 1200 km (745 miles) of boundary lines had been surveyed or renewed, and 400 fire ponds had been constructed.

Assistance to eligible forest landowners for improvements on individually managed properties in accordance with an approved forest management plan is as follows:

Silvicultural operations — 100% of the approved cost.
Access road construction — 60% of the approved cost.
Boundary line work — 60% of the approved cost.
Fire pond construction — 100% of the approved cost.

Since forest conditions and, therefore, costs of forest management operations vary widely, approved costs will reflect experience and conditions in the local areas. The rates, revised annually, are in line with actual costs; they are piecework rates designed to give average earnings.

The second component of the provincial assistance program is for small woodland owners and is known as group management of private lands or the Group Venture Forest Management Program. This program places strong emphasis on the creation of group mangement ventures to overcome the fragmentation and small scale aspects of many private woodland holdings. Eight group ventures have been organized — three as cooperatives and five as limited companies.

In the limited companies, no single shareholder may hold more than 10% of the votes. The group members pay a commission of 5% of the roadside value of their operating overhead account. Each group must be comprised of at least ten woodlot owners and cover at least 405 ha (1000 acres) of forest. All groups have a board of directors and full- or part-time staff, including a full- or part-time manager, forester, field supervisor and office supervisor. The forest improvement work for roads, surveys, ponds and silvicultural work is funded 100% by the province on members' lands, but they are required to keep their costs within the same rate structure as those provided to individual small woodland owners. The groups have the advantage of being able to average their costs for any one treatment over a fiscal year.

Any forest landowner who has woodlands within the group venture service area may enter into an agreement for management service. The forester employed by the group venture prepares management plans for the woodlot owner as well as comprehensive plans for the group venture area.

Landowners may do their own work and receive payment or the work may be done by crews organized by the group.

The eight venture groups comprise over 500 woodlot owners, and the total area placed under management is 31 000 ha (76 601 acres). Forty kilometres (25 miles) of roads have been constructed and 250 km (155 miles) of boundary lines surveyed. In addition, silvicultural treatments have been completed on 2000 ha (4942 acres) of woodland.

The third component of the program is to provide assistance to pulp and paper companies that individually own 2025 ha or more (5000 acres or more); three companies have placed their land in this program. In 1980, silvicultural treatments were carried out on 13 000 ha (32 123 acres) of land at a total cost of $2.5 million. The companies received $926 000 in financial assistance or about 36% of their total cost, and were assisted on a sliding scale—the more they did, the greater the provincial assistance. For 3.6 m^3 (1 cord) of wood they cut, they must spend $1 on management to get financial assistance. Management plans are required and must be prepared at the companies' expense.

The fourth component allocates assistance to landowners owning 2025 ha or more (5000 acres or more) [excluding pulp and paper companies]. In Nova Scotia, there are about 30 owners who altogether own just under 185 000 ha (457 135 acres) or about 6% of Nova Scotia's private land. Three of these owners have placed a total of 50 000 ha (123 550 acres) under management in this program. They carry out about a half million dollars worth of silvicultural operations each year, and are required to produce a management plan for which the province pays 70% of the costs.

In addition to government assistance, the Scott Maritimes Ltd. Pulp and Paper Company offers a Woodlot Management Program to private landowners. This program, known as a continuous wood management agreement with private landowners, has been available over the past six years. Because of the long-term investment necessary for improvement of private woodlands, the agreements are generally for not less than 20 years and may be for as long as 45 years where tree planting is involved. Essentially, the company agrees to manage the landowner's forest property and pay a fair market value for the forest products the company harvests. Pulpwood is purchased by the company while sawlogs are sold to the highest bidder. One hundred and fifteen agreements have been signed with landowners including both non-residents and residents.

Initially, the private land forestry program relied heavily on staff from the Department of Lands and Forest. In 1979, 39 foresters and technicians were involved. Increasingly, however, field work has been taken over by consulting foresters, and the work of the provincial staff has shifted from drawing up management plans to the monitoring and processing of claims. In 1981, there were six consulting firms employing 18 foresters and technicians.

Provincial tree nurseries produce nursery stock for sale to the private sector for both reforestation and Christmas tree purposes. At present, forest landowners pay $80 per thousand for bare root nursery stock and $75 per thousand for container stock. Landowners planting trees under private land forest management assistance get a full refund on the stock. In 1981, between six million and eight million trees were distributed, of which 4.2 million went to large landowners including pulp and paper companies. Private nurseries in Nova Scotia, mostly owned by pulp and paper companies, annually produce six million trees, mostly of container stock.

The DREE agreement signed in 1977 provides a major portion of the funds for private land forestry for the period April 1, 1977 to March 31, 1982. The five-year funding is distributed as follows:

Private land forest management:	
Small properties	$13 260 000
Large properties	5 000 000
Group ventures	2 000 000
Silvicultural crews	125 000
Consulting foresters	60 000
Education, public information, and evaluation	600 000
Total funding	$21 045 000

An average annual expenditure over the past five years for private land forestry in Nova Scotia is $4.2 million. The current annual expenditure, however, is about seven million dollars. This represents about 14% of the total budget for the Nova Scotia Department of Lands and Forests.

Newfoundland

Private forest land holdings in Newfoundland cover about 13% of the total forest land area; 78% of these lands are held by two large pulp and paper companies, namely Bowater Newfoundland Limited and Abitibi-Price Inc.

According to Statistics Canada, there are 4 981 500 ha (1 230 000 acres) of private forests in Newfoundland. Small private woodlands account for about 10 935 ha (27 000 acres). Interested woodland owners can obtain technical advice from the Department of Forest Resources and Lands. There is, however, no specific private land forestry program in the province.

IX. PRIVATE LAND FORESTS IN OTHER COUNTRIES

UNITED STATES OF AMERICA

There are three differences between the United States and Ontario when private land forests are compared. These are the ratio of private to government owned lands, the federal-state relationships in promoting private forest management, and forestry industry assistance to private forest landowners.

There are four million non-industrial private forest owners in the United States. They own 1 146 150 km² (283 million acres) or 58% of the 1 976 400 km² (488 million acres) of commercial forest land, and supply 38% of the U.S. harvest of softwood and 76% of the hardwood. Their importance is greatest in the east where nearly three-quarters of all commercial forest land belongs to farmers and other non-industrial owners. Table 46 shows the area of commercial forest by ownership class. This table includes land owned by Indians and other native Americans, and not held in trust by the federal government, industries not directly involved with the lumber or wood products industry, and non-farming individuals and partnerships.

At the federal level, the United States Forest Service [USFS] is a division of the United States Department of Agriculture [USDA]. Forest historian Harold K. Steen calls it "an accident in history, a marvellous occurrence which has enabled forestry to benefit enormously from the persuasive politics of agriculture."

At the state level, forestry may be a part of an environment, resource, or conservation department, or a separate forestry commission.

The USFS currently is the largest bureau in the USDA. It has three main divisions: the National Forest Administration, State and Private Forestry, and Research. The state and private forestry division is involved in cooperative forest agencies. Direct funding of private land forest programs, through individual state forestry programs, is a major component of federal private forestry assistance. Financial aid is to individual states for the Forestry Incentive Program, Rural Forestry Assistance Program, Cooperative Land and Resource Protection Program, and the Forestry Extension Program. The 1981 budget for the state and private forests division was just over $73 million. No division with responsibilities similar to the state and private forestry division exists in the Canadian Forest Service.

TABLE 46

OWNERS OF COMMERCIAL FOREST LAND* IN THE UNITED STATES[§]

Type of Owner	Area in Square Kilometres (Acres)		Percentage of Total Area	
Public:				
Federal	403 785 (99 700 000)		20.4	
State	95 580 (23 600 000)		4.9	
Local government	29 160 (7 200 000)		1.5	
Indian land in trust	24 705 (6 100 000)		1.3	
	553 230 (136 600 000)	553 230 (136 600 000)	28.1	28.1
Private:				
Forest industry	275 400 (68 000 000)		13.9	
Non-industrial				
Farmer	473 040 (116 800 000)		23.9	
Other private[#]	673 920 (166 400 000)		34.1	
	1 422 360 (351 200 000)	1 422 360 (351 200 000)	71.9	71.9
Total commercial forest land		1 975 590 (487 800 000)		100.0

* Commercial forest land is forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. Such forest land must have the capability of producing in excess of $1.40 m^3/ha/yr$ ($20 ft^3/ac/yr$) of industrial wood

§ Source: United States Forest Service Statistics

Includes land owned by Indians and other native Americans not held in trust by the federal government, industries not directly involved with the lumber or wood products industry, and non-farming individuals and partnerships.

Recent national forestry laws have authorized intensive planning at state and regional levels. Of particular note, and related to private land, is the Forest and Rangeland Renewable Resources Planning Act of 1974 and the Cooperative Forestry Assistance and Cooperative Forestry Extension Acts of 1978.

The forest industry in the United States makes a large contribution to the private forestry sector. The American Forestry Institute [AFI], which operates the American Tree Farm Program, is industry sponsored. In addition, numerous pulp and paper companies and lumber companies provide landowner assistance programs on an individual basis to aid private landowners in forest management of their lands.

The National Importance of Private Non-Industrial Forest Lands

Non-industrial private forest ownerships contain 26% of the softwood growing stock inventories in the U.S. From 1 146 150 km^2 (283 million acres) of commercial forest land, owners have supplied even larger proportions of the harvested wood; that is, 38% of the softwood and 76% of the hardwood harvest in 1970.

Since the early 1950s, the Forest Service has compiled several studies on the nation's supply and demand timber situation. The latest assessment of future supply and demand has indicated that the volume of paper and wood products required by domestic consumers will approximately double by the year 2030. Hence the potential for increasing timber growth on non-industrial private ownerships is considered large.

Hardwood production can be increased through improved management of existing stands, protection activities and marketing, and tree planting can increase the softwood growing stock. In 1977, the USFS estimated that over 162 000 km^2 (40 million acres) of forest land in private ownership were still in need of tree planting.

The 1980 draft Resources Planning Act assessment, entitled Report to Congress on the Nation's Renewable Resources, reveals that from the early 1950s to 1977 the consumption of industrial roundwood products increased from less than 280 million to about 364 million cubic metres (100 million to 130 million cunits) per year. Industrial roundwood products include sawlogs, veneer logs, pulpwood and numerous other products such as poles, pilings and posts. The USFS projects that the demand for timber products converted to roundwood volumes, incorporating allowances for increased yields and improved utilization will increase from 364 million to 560 million cubic metres (130 million to 200 million cunits) by 1990. By 2030 the demand will have doubled from 1977, reaching 812 million cubic metres (290 million cunits).

The U.S. Forest Service also estimates that between 1977 and 2030 the demand for softwoods will increase from 288.4 million to 557.2 million cubic metres (103 million to 199 million cunits). Demand for hardwood during the same period is projected to triple from 81.2 million to 246.4 million cubic metres (29 million to 88 million cunits). Unless these demands can be met within the states through increased productivity, the USFS predicts an increase in net wood imports of 67% by 2030.

According to former Secretary of Agriculture Bob Bergland,

> During the next 50 years the forest industry's share in the total timber production is expected to drop from 38 to 24 per cent. The national forests share will remain about the same as it is now. Thus the private non-industrial will provide the only real opportunity for significant increases in the supply of timber and other forest products.

Private non-industrial landowners are thus perceived by the U.S. Forest Service as the best means of meeting these demands since they have the greatest potential for increasing forest productivity. In view of this, President Carter in 1977 directed the secretary of agriculture to conduct a comprehensive study of federal activities concerned with privately owned lands.

To examine the private forestry status in the United States, four regional conferences were held during 1978-79 and a national conference on private non-industrial forestry was held in Washington in November 1979.

There is a diverse approach to private land forestry in the United States, and the very clear role of the federal government in supporting private forestry programs in all states is a feature that contributes greatly to the success of American private land forestry programs. The central program promoting forest management on private lands is the Forestry Incentive Program, but a variety of support programs such as the Agricultural Conservation Program, Soil Conservation Service Program, Cooperative Forest Management and Extension Programs, State Incentive Program, and Industry Landowner Assistance Program all contribute to the overall national goal of improving productivity on non-industrial private forest lands.

Agricultural Conservation Program [ACP]

The USDA, under the authority of the Soil Conservation and Domestic Allotment Act of February 27, 1936 [as amended], operates the Agricultural Conservation Program. This program is administered by the Agricultural Stabilization and Conservation Service [ASCS] of the USDA. County ASCS committees administer the program locally. Thus, the network of ASCS state and county offices is the focal point for ACP administration. To ensure that conservation practices are specifically designated to meet local needs, authority is delegated to the elected ASCS committees. The county ASCS committees, state foresters, and the Soil Conservation Service decide on the conservation practices that will be worthy of assistance to landowners.

Additional services in the design of programs are provided by community ASCS committees, soil conservation service districts, Farmers Home Administration, the USFS, extension services, vocational agricultural teachers, and farm organizations.

ACP is a cost-sharing program. Its aim is to improve soil and water conservation through good land use management. More recently, ACP has stressed lasting solutions to critical soil, water, and agricultural pollution problems. ACP practices, where the primary effect is to increase production, have largely been eliminated. Briefly, some ACP cost-sharing practices are: cropland protective tillage, competitive shrub control, contour farming, rangeland moisture conservation, stream protection, animal waste control facilities, creation of permanent wildlife habitats, plugging artesian wells, streambank stabilization, land smoothing, mulching, subsoiling, ponds for woodland protection, and livestock water facilities.

Under ACP, there are two kinds of agreements made with landowners — annual and long term. Long-term agreements are for a minimum of three years and a maximum of ten years. Two forestry practices are eligible for cost sharing: tree planting and timber stand improvement. ACP uses forestry practices as conservation measures.

Cost-sharing payments are made to landowners by local ASCS offices upon completion of approved forestry work. Payments for such work will vary, but usually amount to 50% to 80% of the average cost. The landowner must pay the remainder of the costs. The maximum cost-sharing payment that a person can receive under ACP per year is $3500. State foresters or consultant foresters supply technical assistance. ACP also provides cost-sharing money to landowners for forestry related conservation practices such as fencing, firebreaks, pruning, windbreaks, and other operations. The total Agricultural Conservation Program federal cost-sharing payments in 1980 was just over $171 million. This money was paid out to 245 289 landowners in 3052 counties. The amount of money cost shared for regular and long-term agreements on tree planting and timber stand improvement was $2.6 million and $1.5 million, respectively.

The reason that the funding is low for these two components is that a separately funded Forestry Incentives Program was set up in 1974. The bulk of federal forestry assistance money to landowners is provided by this program. Although most of the practices where the primary effect is to increase production have largely been eliminated, the New England Pilot Fuelwood Project is an exception since it is supported with ACP funds. During the period 1936-75, ACP funds assisted with the planting of 24 780 km^2 (6 118 567 acres) of land.

TABLE 47

SUMMARY OF 1980 AGRICULTURAL CONSERVATION PROGRAM, FORESTRY, AND FORESTRY RELATED PRACTICES*

[Annual and long-term agreements]

Forestry Practice	Counties	Farms	Area in Hectares (Acres)	Federal Cost-Sharing Payments	Cost-Sharing Payments per Hectare (Acre)
Tree planting	1219	6 341	19 724 (48 700)	$2 592 604	131.44 (53.24)
Timber stand improvement	837	3 476	24 978 (61 673)	1 475 670	59.08 (23.93)
Forest tree stand improvement—New England Pilot Fuelwood Project	18	91	593 (1 464)	27 028	45.58 (18.46)
Windbreak—restoration or establishment	676	11 366	-	3 375 521	-
Renovating field windbreaks	1	1	-	100	-
Total	2751	21 275	45 295 (111 837)	$7 470 923	

* Source: USDA Statistical Summary Agricultural Conservation Program, 1980 fiscal year.

New England Pilot Fuelwood Project:

The ACP New England Pilot Fuelwood Project is an example of a special regional program that was developed to meet a particular need. It began in April 1979 as a four-state, twelve-county pilot program to provide technical assistance to landowners working to harvest firewood. The program gave direct assistance for the construction of access roads to inaccessible stands and for erosion control. The project was launched in New England because of the region's heavy dependency on imported oil and its intensive interest in wood heating as an alternative. In October 1979, the pilot project was expanded to include every county wishing to participate in all six New England states [Maine, Vermont, New Hampshire, Massachusetts, Connecticut, and Rhode Island].

The growing demand for firewood caused concerns relating to the future of the hardwood forest. These concerns were for the continued supply of quality hardwood timber, overcutting of individual timber stands, possible environmental degradation, and the loss of future forest management alternatives because of improper actions.

To alleviate these concerns, the following program objectives were established:

(i) Promote timber stand improvement as well as silviculture of the better forested sites, especially as an alternative to arbitrary or concentrated overcutting.

(ii) Encourage the cutting of firewood in stands that are overstocked and in need of thinning and, in turn, promote more vigorous growth and improve the quality of the residual stands.

(iii) Reduce the pressures placed on a limited public forest by increasing the private non-industrial area available for firewood harvest.

(iv) Minimize the potential environmental impacts of unguided cutting such as increased soil erosion and wildlife habitat destruction.

Firewood is in heavy demand and because of this will be harvested with or without the influence of a professional forester. The intent is to have foresters play a greater role in the harvesting of firewood in order to increase the opportunity for upgrading hardwood stand quality and production.

Participants in the fuelwood program must be non-industrial landowners with at least 4 ha (10 acres) of forest land. At least 2 ha (5 acres) of their forests must be treated, and priority is given to hardwood pole timber in stands with stems averaging 12.7 cm to 25.4 cm (5 to 10 inches) in diameter. Stands to be treated must have a growth potential of at least 3.5 m^3/ha/yr (50 ft^3/ac/yr) of wood. Stands are not eligible when more than 30% of the materials removed are merchantable products other than fuelwood. At least 2.3 m^2 (25 square feet) of basal area must be removed and the stand must yield at least 44.8 m^3/ha (5 cords/acre) of fuelwood. All landowners must agree to manage and harvest their forests as specified in a ten-year forest land management plan.

ACP pays 100% of the costs for technical assistance (management plans, access road layout, and tree marking) and 75% of the actual costs of access road construction up to $1.64/m (50¢/linear foot). Cost-sharing payments for roads cannot exceed $61.78/ha ($25/acre) for the stands to be treated under the program. The cost of erosion control measures are also eligible at the 75% cost-sharing rate. This is considered to have been a cost effective program which has expanded economic and employment opportunities. Additional opportunities have resulted for consultant foresters who carry out much of the management planning and supervise operations at the field level. By September 1980, approximately $1 523 000 in special ACP funds had been made available to the participating states for cost sharing. In addition, state ASCS reserves made available $119 000 for the same purpose. Funds totalling $356 200 were allocated to the state forestry organizations through the U.S. Forest Service for technical assistance and program administration; about 2200 landowners had requested assistance. Owing to the success of the pilot project, plans are currently being made to expand the program to include six more states for 1982, namely New York, Pennsylvania, Delaware, New Jersey, Maryland, and Minnesota. As a result of ACP, fuelwood is being generated in an economically efficient as well as silviculturally and environmentally sound manner. By April 1981, more than 10 125 ha (25 000 acres) had qualified for treatment in the New England states. The involvement of professional foresters in the pilot project has prevented the premature harvest of many potentially valuable forest trees. Furthermore, fuelwood cutters have been directed to the poor quality trees and those that compete with the most desirable future crop trees.

Forestry Incentives Program [FIP]

Authorized by congress in 1973, FIP provides federal cost-sharing payments to private landowners for tree planting and stand improvement. The program is available in counties designated potentially suitable for production of timber products on the basis of a Forest Service survey on total eligible private timber acreage. The federal share of costs ranges from 50% to 75% depending on the cost-sharing rate set by the state or county ASCS committee administering the program. Early in 1982, it was proposed that the maximum rate be lowered to 65% from 75%.

In 1974, its initial year, FIP was part of the Rural Environmental Conservation Program. In 1975, it became a separately funded program. Currently, the Cooperative Forestry Assistance Act [1978] authorizes the secretary of agriculture to develop and implement FIP on non-industrial private forest lands.

The Forestry Incentives Program is jointly administered at the national level by the USDA's Agriculture Stabilization and Conservation Service and by the U.S. Forest Service in consultation with the Committee of State Foresters. The ASCS, with its state and county organizations, is the primary contact for subscribers. Through an interagency agreement, the USFS is assigned the responsibility for technical assistance and, in cooperation with state foresters, develops funding recommendation procedures and forestry practice specifications. It is responsible for on-the-ground application of these practices. Technical assistance to landowners is provided by state or consultant foresters, who also coordinate with the state ASCS committee in program development. U.S. Forest Service personnel in the regional and area offices work directly with the state foresters and the state ASCS committees.

FIP was authorized for the purpose of increasing the nation's supply of timber products on private non-industrial lands. Its three objectives are timber production; enhancement of forest resources such as aesthetics, fish and wildlife, forage, outdoor recreation, water supply and timber production; and cost effectiveness. It operates in designated counties in the United States, Guam, Puerto Rico, and the Virgin Islands.

Those who are eligible include private individuals, groups, Indian tribes and other native groups, associations, corporations, or other legal entities owning more than 405 ha (1000 acres) of forest land. The secretary of agriculture may waive this limit for owners of up to 2025 ha (5000 acres) of forest land if he determines that significant public benefit will accrue. Private entities, principally engaged in the business of manufacturing forest products or providing public utility services, as well as corporations whose stocks are publicly traded are not eligible. However, forest landowners who manufacture forest products on a part-time or irregular basis are eligible.

Land determined by the prescribing foresters as capable of producing growth at 3.5 m^3/ha/yr (50 ft^3/ac/yr) or more [mean annual increment] is eligible for FIP. Land not meeting the minimum growth requirements and needing reforestation for other than timber production may qualify for assistance under ACP. Open lands in an ownership are eligible for tree planting if they meet the productivity standard, but the area classed as eligible forest land shall be initially considered and prescribed for treatment. Forest lands on which a commercial harvest has recently occurred qualify for FIP. The minimum area required for FIP cost-sharing assistance is 4 ha (10 acres); smaller acreages of tree planting or timber stand improvement may qualify under ACP. The most cost-effective practices have priority for implementation, and requests involving 16 ha (40 acres) or more are usually given high priority.

The Forestry Incentive Program includes both annual agreements and long-term agreements. Long-term agreements are for a minimum of three years and maximum of ten years, and must include a minimum of 16 ha (40 acres). Once approved, they remain in effect until the practice is either completed or the agreement is cancelled. A practice approved in one fiscal year can be completed in a later fiscal year. Agreements cannot be extended beyond 20 months without contact with the landowner and approval of the state ASCS committee. Each FIP agreement must be covered by an approved management plan. Consultants and private enterprise are used to provide additional capability for accomplishing the program objectives.

Cost-sharing rates are the same for annual agreements as for long-term agreements. Up to 75% of the costs for FIP practices incurred by the landowners can be cost shared with federal funds. The maximum cost-sharing rates are recommended by the state forester and approved by the state ASCS committee. In some cases, maximum costs are established nationally for some supporting practices; however, maximum costs are established for all practices at the state level. The maximum cost-sharing payment a landowner may receive is $10 000 per year.

Ten per cent of the total FIP funds appropriated annually are used to provide technical assistance. These funds are transferred to the U.S. Forest Service by the ASCS. The USFS allocates these funds to the states through its area and regional offices.

Prior to the Revenue Act [1978], taxpayers were required to include FIP and ACP payments when reporting their gross income. This requirement, in effect, discouraged some landowners from participating in the program. To correct this problem, the Revenue Act [1978] and the Technical Correction Act [1979] stated that cost-sharing payments are to be made with respect to capitalized reforestation expenditures and that they would not be required to be included in the gross income. If the cost-sharing payment is related to timber stand management expenses, the payment is included in gross income but a deduction for expenses is also permitted. Thus, the net effect [after including the payment in income and providing a commensurate deduction] is virtually identical to the exclusion from gross income applicable to capitalized reforestation expenditures.

FIP accomplishments for the 1979-80 fiscal year are shown in Table 48.

TABLE 48

FORESTRY INCENTIVE PROGRAM ACCOMPLISHMENTS FOR
FISCAL YEAR OCTOBER 1, 1979 TO SEPTEMBER 30, 1980*

[Annual and long-term agreements]

Forestry Practice	Counties	Farms	Area in Hectares (Acres)	Federal Cost-Sharing Payments	Cost-Sharing Payments per Hectare (Acre)
Tree planting	952	5098	88 679 (218 960)	$13 356 971	$150.62 (61.00)
Timber stand improvement	842	3895	49 807 (122 980)	3 228 985	64.83 (26.26)
Special forestry	52	190	7 577 (18 708)	186 802	24.65 (9.99)
Total	1846	9183	146 063 (360 648)	$16 772 758	

* Source: USDA Statistical Summary for the Forestry Incentives Program 1980.

A summary of FIP accomplishments for 1975-80 is presented in Table 49.

TABLE 49

FORESTRY INCENTIVES PROGRAM ACCOMPLISHMENTS 1975-80*

[Annual and long-term agreements]

Forestry Practice	Participants	Area in Hectares (Acres)	Federal Cost-Sharing Payments	Cost-Sharing Payments per Hectare (Acre)
Tree planting	27 957	348 308 (860 021)	$45 860 557	$131.67 (53.32)
Timber stand improvement	23 511	290 664 (717 688)	15 542 325	53.47 (21.66)
Special forestry	315	13 481 (33 287)	269 253	19.97 (8.09)
Total	51 783	652 453 (1 610 996)	$61 672 135	

* Source: USDA Statistical Summary for the Forestry Incentives Program 1980.

Cooperative Forest Management Program [CFMP]

The CFMP is a joint undertaking between federal and state governments to provide technical forestry services to private landowners, forest operators, wood processors, and public agencies. There are about 1000 state service foresters who provide forestry assistance through the program. Since 1978, CFMP has been under the authority of the Cooperative Forestry Assistance Act which provides for rural forestry assistance.

Service foresters give advice to landowners on the marketing and processing of forest products, reforestation, timber marking, and management plans. The program also works to improve utilization of the nation's forest resources and creates additional jobs and income for rural people. Both state and federal forest product utilization specialists provide technical assistance to timber harvestors and processors. Some aspects of this work are those dealing with the improved use of small logs, more efficient processing of logs, and improved distribution and use of forest products.

It is a policy that cooperative forestry programs are not to be in competition with private enterprise. Consulting foresters are limited to servicing individual forest owners who are in a position to pay for technical assistance. When the timber is of marketable size or the owner has other sources of income, the consulting forester can provide these services at his usual fee. Furthermore, FIP, ACP, or individual state cost-sharing money received by landowners helps to pay for work done by consultants and contractors.

As a general rule, each state establishes an approximate maximum limit for the amount and type of assistance to be offered free of charge by government service foresters to individual owners. A maximum limit on free services is recognized as a necessity in a program where responsibility for the proper expenditure of public funds is involved. Most state foresters have established a policy limiting free services to five days or less each year [or its equivalent] to any individual landowner.

In New Hampshire, for example, landowners may receive up to two days free assistance per year; and only harvests of less than 210 m^3 (40 MBM) will be marked by service foresters. Large marking jobs are handled by consultants who normally charge landowners 15% of the stumpage for the timber marking and sale arrangements carried out for the landowner. Some states no longer offer free services for all types of forestry assistance. In New York State, for example, charges for forest management services offered under New York's Forest Practice Act are given in Table 50.

TABLE 50

NEW YORK STATE CHARGES FOR FOREST MANAGEMENT SERVICES

	Cost to Owner
Timber marking services maximum 20 ha (50 acres):	
Sawtimber	
-19.66 m^3/ha (1500 fbm/acre) or more	\$14.83/ha (\$6/acre)
-less than 19.66 m^3/ha (1500 fbm/acre)	\$4.94/ha (\$2/acre)
Fuelwood, pulpwood, posts, poles	\$4.94/ha (\$2/acre)
Preparation of a forest management plan -limit of 3 days field time	99¢/ha (40¢/acre)

Other assistance such as reforestation, forest management advice, and services connected with the federally funded FIP and ACP are offered without charge.

The 1981 federal budget for the Cooperative Renewable Resources Management and Utilization Program comprised \$17 505 000 for cooperative forest management, and \$4 821 000 for assistance in management planning and technology implementation. An amount of \$1.8 million was used for urban forestry assistance.

Individual states apply for funds via a grant document, and the states must show how much they will spend in matching funds. All planning is done three years in advance. The grant document specifies what the state will accomplish with the funds. Target categories are indicated. The federal cooperative forestry assistance money helps each state to develop strong state forestry organizations capable of providing private landowner assistance.

TABLE 51

COOPERATIVE FOREST MANAGEMENT ACCOMPLISHMENTS 1940-76

Number of woodland owners assisted		2 447 592
Area of woodland involved		625 592 km^2 (154 467 285 acres)
Volume of timber marked		116 478 721 m^3 (22 214 156 000 board feet)
Number of loggers and wood processors assisted		241 988
Expenditures		
Federal	$ 64 208 000	
State	148 490 000	
Total	$212 698 000	

Extension Forestry Assistance

The Extension Service is an educational agency of the USDA. It functions in cooperation with the state extension services of the land grant colleges. Extension foresters are specialists and members of the university staffs. In the U.S., there are 47 land grant colleges that have forestry extension programs. A total of 146-man years is spent in forestry extension at these colleges. The program which is directed by the Science and Education Directorate of the USDA, is administered by two foresters in Washington. The total annual expenditure for extension forestry in the United States is $6.4 million, of which 31% comes from the federal government. Thus, the federal expenditure for extension forestry is $1 984 000.

The Renewable Resources Extension Act was funded for fiscal year 1982 at $2 million. This will allow approximately one additional natural resources position per state in the nation. The act provides for an expanded program and this will be added to ongoing extension natural resources programs. It is impossible for extension foresters to visit and advise the thousands of landowners in their state. Therefore, they work through county extension agents and at state and district levels. They also offer out-of-school training in many subject areas including multiple-use forest management, insect, disease, fire, Christmas tree production, windbreak planting, harvesting, marketing, business management and safety. Training methods may include individual visits, but more often involve short courses, seminars and demonstrations, and research information adapted for media use. The methods selected depend on the needs and requests of woodland owners, pulpwood producers, loggers, wood processors, and other adult and youth groups. Extension foresters may call on university research and teaching personnel, professional people in private industry, or state and federal government personnel to provide expert advice and information for use in their work. The county extension agents are the local representatives of the state extension service and they are an important source for information concerning extension forestry work along with state service foresters.

State Forestry Incentive Programs

In the United States, many individual states have implemented programs in addition to the federal cooperatively funded ones. There are three major categories of programs: educational programs [extension services forestry advisory programs], subsidy programs [incentive payments and tax relief], regulatory programs [state forest practice laws].

A comprehensive inventory of all state policies was the objective of a survey carried out by the National Conference of State Legislatures between December 1980 and February 1981. The survey specifically addressed:

- Laws authorizing forestry incentive programs independently of or in addition to state participation in the Forestry Incentives Program.
- State tax provisions to encourage non-industrial private forest management.
- State forest practice acts that affect mangement decisions.
- Laws providing incentives for retaining land in forest use.
- Any other legislation or major programs intended to encourage forest management.

Six states have authorized cost-sharing programs that are independent of participation in the FIP. They are California, Minnesota, Mississippi, North Carolina, South Carolina, and Virgina. Texas has a cost-sharing program, but it is funded by industry. Cost sharing ranges from 50% to 90% usually with restrictive conditions relating to maximum amounts, area, or types of treatment and species to which assistance may apply. Other states such as Illinois, Louisiana, Oregon, Alabama, and Florida have considered cost-sharing programs, but proposals have either been rejected or not adopted.

Many states have tax provisions applying to private forest lands. Various types of use and productivity valuation are in place as well as severance and ad valorem taxes. Only three states—Alaska, Georgia, and Illinois—have no special treatment for forest land.

Fifteen states either by forest practices legislation or other regulations control, in varying degrees, harvesting, regeneration or other activities. Oregon was a pioneer in developing legislation in 1971 with the Oregon Forest Practices Act. This law authorizes the state board of forestry to establish specific rules covering five types of operations. These are reforestation, road construction and maintenance, harvesting, application of chemicals, and disposal of slash. These activities are regulated on both public and private forest lands. Specific rules are set by the board after public meetings and these rules are then enforced on the basis of three geographic regions in the state. Normally, ownership of less than 4 ha (10 acres) in one continuous tract is exempt from reforestation requirements.

Measures to encourage the retention of lands as forest lands are largely indirect ones, and provide for more favourable tax treatment for maintenance of woodlands. Only Hawaii has state-wide land use zoning in place, and many do not even offer indirect incentives to forest owners to retain their lands in a forested condition.

Forest Industry Landowner Assistance Programs

The forest industry owns 275 405 km^2 (68 million acres) of commercial forest lands containing 16% of the softwood growing stock and supplying 36% of the harvest. Softwood timber in the U.S. is being used at a faster rate than it is growing. The U.S. Forest Service projects a 32% decline in harvest from forest industry lands in the northwest by 1990 because of overcutting. Few, if any, of the forest industries own enough forest land to support their mills. Since small non-industrial private landowners own the largest percentage of commercial forest land [58%], the United States forest industry must rely on these four million landowners as a major supplier of wood. In 1980, landowners produced 123 200 000 m^3 (440 million cunits) of wood and, according to long-term projections, the demand for wood from non-industrial private land will increase to 232 400 000 m^3 (830 million cunits) by 2030.

In many areas, large companies compete for wood. The forest industry assistance programs to private landowners assist in providing forest management services in identifying owners as potential wood suppliers. Assistance programs are the goodwill arm of the forest industry. Although free forest management services and cost-sharing programs are offered by the state governments, inadequate budget and staffing constraints render these programs unable to meet the needs of the people and, more specifically, the requirements of good forest management on private land. Therefore, company assistance programs help to increase the extent and effectiveness of good forest management.

Companies attach various names to their assistance programs. The St. Regis program is called Management Assistance Program. Weyerhaeuser, Boise Cascade, and S.D. Warren Co. call their programs the Tree Farm Family. International Paper has the Landowner Assistance Program, while Westvaco's is referred to as Cooperative Forest Management. Westvaco employs 27 full-time professionals in its Cooperative Forest Management Program, which is available in South Carolina, Virgina, West Virginia, Maryland, southeast Pennsylvania, southeast Ohio, Kentucky, west Tennessee, north Mississippi, and northeast Alabama.

Some programs have been offered for the past 25 years. In Michigan, 21 companies offer landowner forestry assistance services. These services are designed to increase the productivity of private non-industrial timber stands and provide assistance in wood marketing.

Assistance programs are usually carried out on a fairly informal basis. Participating landowners receive free forest management advice and planning services from company foresters as well as free tree marking services. Some companies demand the first right of refusal on wood for services rendered while others do not. Often no formal agreement with the landowner is required for such services.

Another means of dealing with private forest lands is for forest companies to enter into leases or contracts with owners of forest lands. There are three general types.

- Lease of land plus initial lump-sum purchase of timber.
- Lease of bare land for growing timber.
- Lease of land combined with timber payments on a volume basis as cut.

Two systems of payment are in general use. One is a uniform rental payment where the landowner does not receive stumpage when the timber is harvested. The other is an annual rent which is usually significantly lower than in the previous case. For example, it may be little more than enough to pay annual property taxes, but the owner receives some stumpage value when the trees are harvested.

Normally, companies prefer to lease very large acreages on a long-term basis. Usually ten years is considered the minimum term and terms of 40 to 50 years occur. Companies may also enter into share-cropping contracts with owners. In this case, the company manages the tracts, sells the timber to itself or on the open market, and shares the proceeds as agreed to with the owner.

Forest Cooperatives and Associations

After 1920, 68 forestry cooperatives were started. By 1970, only 21 were still operating. Generally, cooperatives have not been successful. The necessary financing to get started and to maintain operations has not been forthcoming, and continuing capable management and member support have been lacking.

The oldest and most successful forestry association in North America is the American Forestry Association. Organized in 1875, it now has over 70 000 members and an annual budget in excess of $1.5 million. The association is dedicated to the conservation and wise use of the nation's forests and forestry related resources. It publishes the monthly magazine American Forests.

There are many state forestry associations, but these are not affiliated with the American Forestry Association and operate independently. Basically, they represent the forest industries in a particular state and promote public education about forestry.

Tree farms are nationwide, and involve 40 202 owners of 323 299 km^2 (79 826 846 acres) of land. A tree farm is an area of privately owned forest land dedicated to the growing and harvesting of forest crops on a continuous basis. The Tree Farm Program is sponsored by the American Forest Institute [AFI] which is supported by wood-using industries. The 1980 budget for AFI was $4.262 million of which $593 100 was committed to the Tree Farm Program. Funding from member companies is based on levies related to the sales value of products.

The Tree Farm Program is one of three main AFI activities; the other two are an education program directed at schools and a media services program. Each year a "Tree Farmer of the Year" award is made. The recipient not only receives nation-wide media coverage, but usually meets with the president of the United States for the presentation of the award.

An unusual organization is the New England Forestry Foundation which was organized in 1944 by Harris A. Reynolds. His objective was to provide woodland owners with a forestry service that would improve forest productivity and therefore increase the financial value of their forests. The Foundation offers a consulting forestry service but is itself non-profit. It has an annual budget of approximately $700 000, of which 80% consists of payments from landowners for forestry services, and the remaining 20% comes from donations, endowments, and timber sales from the Foundation's 3645 ha (9000 acres) of forest land. These lands are memorial woodlots that have been donated. The Foundation employs 27 foresters operating from 17 centers in New England. Service fees charged to owners are comparable with those of private consulting forestry firms. For example, an approximate charge of about 15% for a timber sale includes preparing a prospectus, showing the timber to prospective bidders, and taking the responsibility for the harvesting operation from the contract through to supervision and collecting the money for the sale. The Foundation normally collects a significant part of the sale from the contractor before harvesting is allowed to begin. The fee for marking the timber for harvesting is a sliding one that ranges from 38¢/m^3 to 95¢/m^3 ($2/MBM to $5/MBM). The emphasis of its work is on the provision of professional forestry services for existing stands of timber, rather than on reforestation.

In 1980, another private non-profit organization was formed — the Catskill Forest Association. If offers services only to members; there are about 60 members who pay a $50 membership fee.

Financing and Federal Taxation

Private and public financial agencies play an important role in the financing of private land forests in the United States. Insurance companies probably have the largest amount of money in loans on forests and timber. By law they are restricted to loans of less than 75% of the appraised or market value, whichever is less. Many insurance companies prefer to limit their loans to areas larger than 142 ha (350 acres). Loans by commercial banks are also regulated and, since 1964, banks cannot lend more than 60% of the value of timber.

In 1916, the Federal Land Bank [FLB] system was inaugurated. Although set up with public capital, banking operations were taken over by Land Bank associations and the initial public capital [a federal loan] was paid back. The FLB is owned by its members, and all borrowers purchase 5% of the loan in stock. There are four Federal Land Bank districts serving 14 southern and southeastern states. The FLB objective is to provide credit to farmers and others for agricultural enterprises, forest farmers included. A greater line of credit is available to full-time rather than part-time farmers. Tree farmers may receive loans for up to 85% of the appraised value of their forests, and there is no limit on the size of area or amount of loan, although the forest tract should be large enough to be managed as well as supply forest products that can be marketed profitably. Loans can be made on properties to be reforested, but these require additional securities, held in trust, to complete the reforestation program, as well as a plan for the financing and establishment of the new forest. Loans can be made in conjunction with assistance provided under FIP. Interest rates, determined by a district board of directors, are kept as low as possible and are the same irrespective of size of loan or the nature of the borrowing. Loans are for periods of five to 40 years and may be paid on the basis of equal or declining payments. There is a $50 fee for each loan application on properties with merchantable timber over 81 ha (200 acres) in size. The applicant pays a timber appraisal fee of 25¢/ha (10¢/acre).

The Farmers Home Administration is an agency that lends money to farmers. Loans offered for forestry purposes are:

- Farm ownership loans for developing or buying forest land or refinancing debts against forest land.
- Soil and water loans for developing or improving forest resources.
- Operating loans for normal costs of producing, harvesting, and processing forest products.

Groups or associations may receive loans for forestry purposes, such as obtaining equipment and services, other than for timber processing.

The most recent major change in federal taxation relating to forestry came in 1980 when the Packwood Bill became law. This provides a tax incentive for reforestation of a 10% investment tax credit plus a seven-year amortization period on the first $10 000 of capitalized reforestation expenditures each year. Previously, most direct costs of reforestation such as site preparation, labour, seeds and seedlings, and equipment had to be capitalized and set against revenue annually.

To be eligible for the reforestation tax incentive, the property must be held for the production of timber in commercial amounts, and be at least 0.4 ha (one acre) in extent. Shelterbelts are excluded since deductions for this purpose are allowed elsewhere. Where an owner is also reimbursed by other government forestry programs, expenditures cannot be included for this type of incentive unless the amounts are also included in the recipient's statement of gross income.

EUROPE

Nine countries of the European Economic Community [EEC] form the basis for information on forestry presented here. They are: Belgium, Federal Republic of Germany [West Germany], Denmark, France, Italy, Ireland, Luxembourg, the Netherlands, and the United Kingdom.[8]

The total area of privately owned woodlands in these countries is 19 244 000 ha (47 551 924 acres) and comprise 61% of the total forest area. The remaining 39% is divided between state [18%] and local authority [21%] forests. Three countries—France, Italy, and West Germany—account for more than 17 million hectares (42 007 000 acres) or 89% of the total private forests in EEC countries.

Table 52 lists the basic data for forests in these countries. From 1945-75, all countries except for Luxembourg increased the area of their woodlands. The increases ranged from a minimum of approximately 3% in Belgium and West Germany to 22% in the United Kingdom and 32% in France.

Deciduous tree species predominate in European forests and account for 58% of the forest area. But coniferous species, which make up the balance, provide 58% of the timber produced. The large scale afforestation and reforestation programs that have occurred in a number of EEC countries have primarily used conifers, thus accounting for the major increases in forest areas.

The EEC countries are net importers of timber and timber products, although France is a net exporter of roundwood. It is estimated that the nine countries supply only about 45% of their total requirements for timber and timber products and that this production is considerably less than the actual growth that is available.

A recent study has reviewed the role of small woodlands in these countries and dealt specifically with owners of 50 ha (124 acres) or less. There are an estimated 3.5 million owners of private lands and of these 98.5% own woodlands of 50 ha (124 acres) or less. Of these owners, the greatest number by far own less than 5 ha (12 acres) of forest property. The preponderance of small woodland areas and the associated fragmentation of ownership is a source of major concern. The factors of small size and fragmentation place a serious constraint on both planning and effective implementation of forest management practices, including the marketing and harvesting of wood.

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[8] There are presently ten EEC countries in the European Common Market. Information on Greece, the most recent member, is not included.

TABLE 52

FOREST CONDITIONS WITHIN EEC COUNTRIES*

			Forest Areas in Thousands of Hectares (Acres)					
EEC Country	Area in Millions of Hectares (Acres)	Population in Millions	State Owned	Locally Owned	Privately Owned	Total Forest Area	Percentage of Total Forest Area	Percentage of Forest Increase 1945-75
Belgium	3.05 (7.537)	9.8	75 (185)	217 (536)	325 (803)	617 (1 524)	2.00	2.7
Denmark	4.30 (10.625)	5.0	131 (324)	19 (47)	320 (791)	470 (1 162)	1.55	7.8
France	54.91 (135.683)	52.4	1 400 (3 459)	2 300 (5 683)	10 300 (25 451)	14 000 (34 593)	45.20	31.6
Ireland	7.03 (17.371)	3.1	239 (591)	-	36 (89)	275 (680)	0.90	15.2
Italy	30.12 (74.427)	55.2	286 (707)	2 123 (5 246)	3 784 (9 350)	6 193 (15 303)	20.00	6.4
Luxembourg	0.26 (0.642)	0.4	4 (10)	30 (74)	49 (121)	83 (205)	0.30	0
Netherlands	3.67 (9.069)	13.5	69 (170)	48 (119)	173 (428)	290 (717)	0.95	11.6
United Kingdom	24.40 (60.292)	56.1	740 (1 829)	-	1 100 (2 718)	1 840 (4 547)	5.95	21.3
West Germany	24.86 (61.429)	62.1	2 239 (5 532)	1 811 (4 475)	3 157 (7 801)	7 207 (17 808)	23.15	2.9
Total	152.60 (377.075)	257.6	5 183 (12 807)	6 548 (16 180)	19 244 (47 552)	30 975 (76 539)	100.00	

* Source: Forestry problems and their implications for the environment in the member states of the European Economic Community. Information on Agriculture No. 25. Commission of the European Communities, 1976

Despite inadequacies in survey data, it appears that in all the EEC countries, except the Netherlands, the largest single group of small woodland owners are farmers. A second group, much smaller, is the non-resident executive or professional owner. The attitudes of the owners vary according to both their occupations, their country and culture. For example, woodlands of absentee owners in Belgium, the Netherlands, and the United Kingdom are not usually linked to agricultural uses and serve as status symbols or hunting preserves. Even where the woodlands are part of an overall agricultural ownership, considerable disparity may exist. In Italy, the association is considered close with both farm and woodland being managed, and wood products being used by the owner. In West Germany, farm woodlands may provide many benefits but the primary ones are timber products for use by the owner or for sale. In Great Britain, farm woodland is more often viewed as a reserve of land property or as a supply of timber and fuelwood for farmers to use, without any great economic value. The net result of these various attitudes is that it is generally considered that the small woodlands are making an inadequate contribution to the EEC's timber supply.

Historically, the change in European forests from the earliest clearing by man some six to seven thousand years ago to the present has been related to increases and sometimes decreases in population, as well as requirements for forest products in relation to personal, farm, and industrial uses. In particular, during the 17th and 18th centuries there was excessive use of forests and forest lands. It was during the 19th century, especially the latter half, that important positive changes were brought about. These were related to political, economic, and social reformations; a change in status of many farmers from serf to owner; the development of forestry as a science and profession; and the development of effective forest administrations by state and large owners. Related to this was the control the state exerted on private forest development, and changes in land use. Development of transportation systems and the new and increased demands for wood resulting from industrialization were major factors in changing the forests from subjects of exploitation to productive entities for management. This change, however, was by no means complete. During the present century, two other factors have made a considerable impact. The first is the harvesting or destruction of forests that occurred in parts of Europe during the two world wars. The second is the increase in recreational use and environmental values placed upon forest lands.

Forest Policy and Assistance:

Table 53 outlines the degree to which general frameworks for forest policy and planning together with regulation and support of forest management practices exist in the EEC. It is notable that only Denmark, Ireland, West Germany, and the United Kingdom have a general forest policy framework. Of these countries, all except West Germany have been engaged in deliberate afforestation of heath lands. In addition, all except for France and Ireland have both general land use plans or plans for environmental protection.

Various types of support are given to private owners by all the countries except Belgium where support is restricted to local authority and corporate forests. The support is given in two forms: direct subsidies, which may have conditions attached, and indirect subsidies which are normally in the form of a tax concession of advantage. Table 53 shows that the countries with abundant private forest areas [France, West Germany, and Italy] or major afforestation programs [United Kingdom] provide both forms of subsidy. The three small countries of Ireland, Luxembourg, and the Netherlands provide only direct financial aid but no tax benefits. Table 54 lists the total value of subsidies provided in the EEC for non-state lands. These would include local authority and corporate lands as well as those in individual ownership. The three countries allocating the greatest subsidies [West Germany, France, and Italy] are also those with the greatest forest areas. Half of the subsidies are for measures to increase timber production such as the afforestation and reforestation of land suitable for management and waste lands. As shown in Table 54, this aid contributes 100% to the subsidy programs in Ireland and the United Kingdom, but is much less in proportion to those countries that have more or less stabilized the extent of the private forest estate. Subsidies for opening up and maintaining forest areas are used mainly for road construction and maintenance, and fire prevention and control measures. The subsidies for other measures are in a miscellaneous grouping that includes expenditures on forestry activities relating to afforestation, stand improvement, and road and track construction. In West Germany, Denmark, and France subsidies to forestry associations are included. In the Netherlands, subsidies to build accesses to private forests for the general public are also included in this category.

Indirect subsidies, particularly those that relate to taxation systems, vary considerably. In Denmark, Germany, Luxembourg, Ireland, and the Netherlands income from forestry earnings is related to a sustained yield level such that only earnings in excess of that level are taxable and even then may be subject to a reduced rate of taxation.

In the United Kingdom, forestry expenditures for planting, tending, and stand maintenance may be set against other income for taxation purposes, but this is not generally applicable elsewhere. This may be considered an inducement, particularly for the more wealthy to invest in forest development. Capital and wealth taxes, in which a capital tax is merely a supplementary taxation of investment income and a wealth tax is a levy in capital itself, are other means by which the state can derive revenue and correspondingly reduce incentives in relation to specific types of capital such as forest lands or earnings from forestry. Inheritance taxes are, in effect, a wealth tax and can have a profound effect in the disposition of private forest lands and consequently the effectiveness with which they may be managed. One consequence of a wealth tax is to increase fragmentation of ownership. Land and real property taxes constitute a source of revenue for local authorities yet, particularly where forest properties yield a periodic or intermittent return, the level of such taxes must relate to the other taxes that accrue to the state.

Public access to EEC forests is summarized in Table 55. The forests of Germany and Denmark are by law accessible to the public, whereas in the United Kingdom, Ireland, and Belgium private forests are not. In the Netherlands, and to a much lesser degree in the United Kingdom, owners receive certain subsidies or tax benefits if they voluntarily make their forests accessible to the public. In France, Italy, and Luxembourg there is customary use of private forest lands by the public; if an owner objects, he must fence his property.

In order to provide greater detail on how private forest lands are dealt with, three EEC countries have been focused on — France, the United Kingdom, and West Germany.

TABLE 53

FORESTRY POLICIES APPLYING TO SMALL PRIVATE WOODLANDS IN EEC COUNTRIES*

	Belgium	Denmark	France	Ireland	Italy	Luxembourg	The Netherlands	The United Kingdom	West Germany
Existence of a general framework for forestry policy	O	XXX		XX	O	O	O	XXX	XXX
Existence of general plans for land use	XXX	XX			XX	XXX	XXX	XXX	XX
Existence of general plans for the evironment and the protection of nature	XX	XX	XX	X	X	XXX	XX	XXX	XX
Control of management		X	X	XX	O	XX	XX	O	X
Direct assistance in management	O	X	O	O	O	O	X	X	XXX
Financial aid	O	XX	XXX	XX	X	X	X	X	XXX
Exemptions for taxation	XX	X	XX	O	X	O	O	X	X
Control of the development of areas	XX	XX	X	XX	O	XX	XXX	X	X
Measures directed to small woodlands	O	XX	X	O	O	O	X	O	XX

Regulations and measures O absent
X partial
XX important
XXX very important

* Source: The Role of Small Woodlands in Rural Areas Study P.E. 191 V1/2345/80
Commission of the European Communities, Directorate General for Agriculture

TABLE 54

SUBSIDIES PROVIDED IN EEC COUNTRIES FOR NON-STATE FORESTS* [Annual average values around 1970]

EEC Country	Area of Non-State Forests in Thousands of Hectares (Acres)	Percentage of Total EEC Area	Subsidies [$ Canadian]				Percentage of Total Subsidies in the EEC	Annual Subsidy Per Hectare
			Increase in Timber Production	Opening and Maintaining Forest Areas	Other Measures	Total Subsidies		
Belgium	542 (1 339)	2.1	$241 500	$153 200	$186 100	$581 000	1.0	$1.07
Denmark	339 (838)	1.3	42 300	-	338 100	380 000	0.6	1.12
France	12 600 (31 135)	48.8	12 812 000	3 612 000	1 686 000	18 111 000	30.3	1.43
Ireland	36 (89)	0.1	411 000	-	-	41 000	0.07	1.15
Italy	5 907 (14 596)	22.9	4 397 400	4 103 500	5 517 900	14 019 000	23.4	2.34
Luxembourg	79 (195)	0.3	4 100	18 100	-	22 000	0.04	0.28
Netherlands	221 (546)	0.9	36 400	not stated	1 729 300	2 094 000	3.5	9.48
United Kingdom	1 100 (2 718)	4.3	5 218 800	-	-	5 219 000	8.7	4.74
West Germany	4 968 (12 276)	19.3	6 772 000	7 715 400	4 905 200	19 393 000	32.4	3.90
Total	25 794 (63 737)	100.0	$29 843 200	$15 602 200	$14 362 600	$59 860 000	100.0	

Note: Not included are allocations such as administration overhead, forest seed and planting stock, research, advisory services, and funds for disasters such as fire, windthrow, etc. The values have been converted from European values on the basis of 1 EVR = CAN $1.355.

Source: Forestry problems and their implications for the member states of the European Economic Community. Information in Agriculture No. 25. Commission of the European Communities, 1976

TABLE 55

PUBLIC ACCESS TO EEC COUNTRIES' FORESTS

	Legal Status Regarding Access To Forest Lands			Actual Situation Regarding Access To Forest Lands			Changes Sought In Legal Situation			
							By the Public		By the Administration	
	Permitted	Customary	Not Permitted	Total Access	Roads & Tracks only	Prohibited	Yes	No	Yes	No
Belgium										
State forests			X		X		X		X	
Other public forests			X		X		X		X	
Private forests			X			X		X		X
Denmark										
State forests	X			X				X		X
Other public forests	X			X				X		X
Private forests	X				X			X		X
France										
State forests		X		X			X			X
Other public forests		X		X			X			X
Private forests		X		X			X			X
Ireland										
State forests			X	X				X		X
Private forests			X			X		X		X
Italy										
State forests		X		X				X	X	
Other public forests		X		X				X	X	
Private forests		X		X				X	X	
Luxembourg										
State forests		X		X			X		X	
Other public forests		X		X			X		X	
Private forests		X		X			X		X	
Netherlands										
State forests			X		X			X		X
Other public forests			X		X			X		X
Private forests			X		X			X		X
United Kingdom										
State forests			X	X				X		X
Private forests			X			X		X		X
West Germany										
State forests	X			X				X		X
Other public forests	X			X				X		X
Private forest	X			X				X		X

* Source: Forestry problems and their implications for the environment in the member states of the European Economic Communities. Information in Agriculture No. 25. Commission of the European Communities, 1976.

France

Legislation governing forest lands has a long history back to the Forestry Code of 1827. Since then, complex legislation and regulations have progressively developed and some have directly or indirectly affected the taxation of forest lands. Fragmentation of ownership is considered an overriding problem.

The area of private woodlands has been estimated between 9 800 000 and 10 300 000 ha (24 200 000 and 25 400 000 acres). At present, there are more than three million owners, but the average size of holding is 3 ha (7.4 acres). This represents a doubling in ownership numbers since 1910. There has been an increase in the relative number of holdings of 50 ha or less (124 acres or less) from 57% in 1910 to 68% in 1980; and 6 000 000 ha (15 000 000 acres) are in holdings of 25 ha or less (62 acres or less).

By means of the Serot Law in 1930 and the Monichon Amendment in 1959, provision was made for the reduction of duties payable on transfer of ownership and on succession for forest properties. While this gave benefit to owners of forests that were of some size and could be managed on a regular basis, it has had little effect on smaller-size holdings especially those less than 10 ha (25 acres).

Related to the problem of fragmentation has been a concern that private forest lands have been underproducing, especially in conifer fibre for industrial use. In 1946, a Fonds Forestier National [FFN] was established to enable revenues from a tax levied on forest products to be used to undertake afforestation and other forest improvements. FFN support has been in three forms:

- Non-repayable grants termed "subventions" or "primes".
- Loans at low rates of interest [0.25% to 3%].
- Provision of services by the state under contract. [Grants range from 30% to 100% depending upon the nature of the use and the type of ownership.]

As these incentives came into effect, it was apparent that they did nothing towards checking the increased fragmentation of forest holdings, and in some areas even exacerbated the problem. In 1963, legislation was passed which provided for Centres Regimaux de la Propriété Forestière. Under the law, owners of holdings of 25 ha (62 acres) or more in one block must have management plans prepared and approved by these centres. A result of this legislation is that the management of these forests is separate from that of other forests which come under more general land use laws and regulations.

As early as 1954, legislation was enacted to allow the formation of forest ownership groups or private partnership companies [Groupements Forestiers]. These groups are voluntary and consist generally of neighbouring landowners who receive shares in proportion to the amount of land contributed. The aggregate of lands is then managed as one entity. The setting up of these groups is encouraged by two features. First, they are exempted from capital duties and corporate taxes. Second, they receive preferential treatment from the FFN. During 1958, the number of groups rose from 228 to 2406 while the average size of an area in a group declined from 450 ha to 240 ha (1112 to 593 acres). The provision for formation of groups to date has attracted owners accounting for only a total of 6% of the private forest areas. Therefore, fragmentation of forest holdings still remains a major challenge. One type of group involves individuals who band together for the purpose of joint management of their woodland but retain their individual ownership of the land. An example is the Cooperatives d'Utilization du Materiel Agricole. These groups receive financial assistance from the Fonds Forestier National for staff assistance in their initial years.

Beginning in 1963, when legislation provided that investment groups could be formed, advantage has been taken by banks, pension funds, and insurance companies to form such forestry groups. In 1981, there were 40 groups with an aggregate area of 100 000 ha (247 100 acres). These investment groups are eligible for 30-year loans at 2.5% interest.

Technical assistance and advice to owners stem from a number of sources. For the most part, staff of government services such as the Forestry Service are unable to contribute greatly because of other responsibilities. Rather, forest owner groups and associations mostly offer the professional and technical support.

The Association Forêt-Cellulose, which is supported by the pulp and paper industry, undertakes forest research, publishes technical notes on forestry practices, and supports demonstration forests. Its work is an example of a type of extension that is available in certain regions of the country.

Subsidies from the FFN have been mainly for afforestation. They have taken various forms, varying from rates of 50% of costs with an upper limit for small areas, to 30% for larger areas with no upper limit. Loans are available at rates of 0.25% for periods of 30 years for areas of 20 ha (50 acres) or greater. In addition, contracts to provide services have been in the form of loans at interest rates of 1.5% for periods of 50 years.

On lands where new forests cannot provide the owner with income in the early years of development, regulations have allowed exemptions or partial exemptions from land taxes for periods up to 30 years, depending upon the type of forest and its compliance with certain standards.

West Germany

Some 29% or about 7 200 000 ha (17 800 000 acres) are in forest. The distribution of ownership is summarized in Table 56.

Table 56

DISTRIBUTION OF OWNERSHIP

	Area in Hectares (Acres)	Percentage of Total Area
State forests - in 14 000 individual units	2 240 000 (5 500 000)	30.6
Community and corporate forests - in 18 000 units	1 810 000 (4 500 000)	25.4
Private forests - in 634 000 units	3 160 000 (7 800 000)	44.0
Total forests	7 200 000 (17 800 000)	100.0

The majority [95%] of private owners and half of the community owners have forests of 20 ha (50 acres) or less. Only 434 estates are of 500 ha (1235 acres) or greater. The average size of a private forest is 6 ha (15 acres), a community forest is 113 ha (279 acres), and a state forest is 1800 ha (4448 acres).

Germany has a long history of regulating its forestry. The development of forest science as well as the methods and techniques of forest management began there in the 19th century. This period coincided with the appearance of the first forest laws passed by the parliaments of the emergent German states. Limitations on the activities of forest owners were set by the state only where these were judged necessary and in the public interest.

Legislation pertaining to forestry is a joint responsibility of the federal government and the eleven länders or provinces that make up the country. At the time of federation in 1949, forestry was the sole responsibility of the länder, and it was not until 1975 that the first West German federal forest law came into being. This law sets out principles of forest law within which länder laws and regulations must be formulated. It also incorporates earlier legislation on forest owner cooperatives; provides for the payments of subsidies for specified forest management activities to assist the private and corporate forest owner; sets out minimum management obligations of owners with respect to forest and nature conservation and public access to private forests; and obliges the länder to formulate specific legislation and regulations governing forest management on all lands.

The implementation of forest laws, regulations, and provision of subsidies relates very much to a recognition of not only ownership but also attitudinal or cultural factors. More than 80% of the ownership of small private forests and 70% of the total of private forests are in the hands of full- or part-time farmers. These forests are considered a stabilizing factor in the farm economy and, while providing some income, they are not viewed as a capital that must yield financial returns to compete with going commercial rates.

Community forests are viewed as particularly important for recreation and environmental benefits and tend to be managed accordingly.

The large state forests are valued for their supply of timber to forest industries and for their overall social and economic benefits. The production of timber itself is not regarded as having to be necessarily profitable as an enterprise on its own.

Because of the extent of small private forests, and in recognition that the interests of the owners and better forest management may be served by some form of cooperation, there has been a history in Germany of various types of associations since the early 1900s. In 1975, federal law recognized three types of associations.

(i) Forstbetriebgemeinschaften [FBG]:

These are private law forest management associations formed voluntarily by seven or more forest owners that must have at least one of the following objectives: to coordinate operating plans and individual forestry projects; to undertake forestry practices such as planting, soil improvement, and stand maintenance including forest protection; or to build and maintain forest roads.

(ii) Forstbetriebverbande [FBV]:

These are public law management associations that are formed at the instigation of the state forestry administration for regions where the structure of property ownership is unfavourable to forestry. Initially, an attempt is made to convince the owners that they should band together as an FBG; if this fails, an FBV is formed if two-thirds of the owners, representing at least two-thirds of the forest area, agree to form such an association. All owners in the designated area support the association once it is formed. These associations come under direct guidance from the state forestry administration.

(iii) Forstwirtschaftliche Verinigungen [FWV]:

These are joint forest management associations which are recognized groupings of FBG and FBV associations for the purpose of coordinating forest production and sale of forest products. They also counsel and provide information to member associations.

There are some 1600 associations representing 19% of the total private forest area and 56% of the area of small private forests [100 ha (250 acres) or less]. The average association, which is usually an FBG, comprises 1000 ha (2500 acres) with 90 individual owners. All three types of associations require financing by their members and may employ staff. Most state subsidies for forest management may be paid either to an association or to an individual owner.

It is worth noting that the German Forestry Council, which includes representation from owner organizations, the forestry profession, labour, state forests, forestry administration, and forestry education has the function of advising political and economic authorities on forestry in all aspects. Both the federal and länder governments give subsidies. At the federal level, support is given under provisions of the law, "the Common Responsibility for the Improvement of the Agricultural Structures and Coastal Protection System". Under this law, the federal and länder governments share in the assistance as a "Common Task". Projects are approved by a joint federal / länder committee and funding is on a 60 / 40 basis, respectively. Projects that qualify for assistance under the Common Task are:

- Construction of forest lands and tracts.
- Formation and operation of forest management associations.
- Silvicultural practices, afforestation, conversion and improvement of low yield stands, pruning, and separation of forest from pasture lands.
- Establishment of shelterbelts and hedgerows.

For most silvicultural measures and road and track construction, grants are up to 80% of eligible costs. There are also loans for up to two-thirds of road and track construction costs with interest rebates up to 5% and a minimum interest liability of 3%.

For afforestation and stand conversions, scales of financial subsidies ranging from DM 1200 to DM 3500 ($624 to $1820 CAN.) per hectare are set. Support for forestry associations is 40% for initial investments, 40% in the second five years, and 20% for a further five years.

The länder may give additional assistance to private and community forest owners. These subsidies are diverse, but in general do not exceed 80% of the costs. For example, Bavaria forest law gives assistance to owners for 75% of the damage suffered from fire, if compensation cannot otherwise be obtained; for special management requirements of protection and recreational forests; and for forest management projects deemed necessary, but not provided for by Common Task support. A länder or provincial government exerts major control over all forestry activities. In Bavaria, the Forest Service is the forestry authority and undertakes all management operations on state forests. They also compile a register of all forests and keep an up-to-date forest inventory. In the community and corporate forests, they are either by law or by contract responsible for management planning and, to an increasing degree, technical operations. Although the administration remains in the owner's hands, the sale and financial accounting is done by Forest Service staff. Many private forest enterprises have their own mangement organization. For those who do not, advice and assistance are available from the Forest Service and operations undertaken by it are at fixed charges. The Forest Service thus has an important role in the organization and provision of assistance to forest management associations.

Private and community corporate forests may not be deforested for other uses without state permission. Forest properties may not be divided without permission of the state, and the division of properties of less than 1 ha (2.5 acres) is not normally allowed. Federal forest law provides for public access to all forest lands—at the user's risk—but leaves to the länder the responsibility for detailed regulation. These regulations deal with the type of public access or land use; the specific areas where an owner may prohibit access to prevent damage to the forest; restrictions on harvesting; and so forth.

By law a landowner in Bavaria must reforest cutover areas within three to five years, otherwise there is a wide latitude for private landowners to manage their forests.

State, community, and corporate forests are required to be managed in an exemplary manner. Conservation and recreational uses as well as timber production are to be equal objectives for management. A communal or corporate forest may be managed under contract by the Forest Service or by the forest owner, in which case it receives a 70% subsidy from the state. Several community forest owners may cooperate and hire a single management staff.

United Kingdom

The area of productive woodland in the United Kingdom is 1 750 000 ha (4 300 000 acres) or approximately 40% of that of Nova Scotia; yet the timber production is the same — 4 300 000 m³ (1 500 000 cunits) [1979]. Private woodlands constitute 865 000 ha (2 137 415 acres) or 49% of the total forest estate. As already indicated, the United Kingdom is one of the few EEC countries where the forest land base is being increased significantly. In 1980, 24 400 ha (60 292 acres) of new plantings were made, the majority being in Scotland, of which two-thirds were by the Forestry Commission [F.C.] and one-third by private owners.

Forestry is the responsibility of the Forestry Commission. It was established in 1919 to make good the depletion of the nation's timber in World War I and to establish a reserve of timber for future use. During World War I, some 182 000 ha (449 722 acres) of woodland, the bulk of it in private ownership, were felled and this served to emphasize that private woodlands were not only a national resource but a vital one.

The Forestry Commission operates under the authority of the Forestry Act of 1967 and pursues the following objectives:

(i) to advance knowledge and understanding of forestry and trees in the countryside;
(ii) to develop and ensure the best use of the country's forest resources;
(iii) to promote the development of the wood-using industry and its efficiency;
(iv) to undertake research relevant to the needs of forestry;
(v) to combat forest tree pests and diseases;
(vi) to advise and assist with safety and training in forestry;
(vii) to encourage good forestry practice in private woodlands through advice and schemes of financial assistance and by controls of felling.

In achieving these objectives, the F.C. functions as a national forestry enterprise and in doing so has an obligation to develop forests for the production of timber; to protect and enhance the environment, to provide recreational facilities; to simulate and support local economies in certain areas by the development of forests; to foster an harmonious relationship between forestry and agriculture; and to manage the forest estate economically and efficiently and be accountable to ministers and parliament. The F.C. reports to three ministers — the minister of agriculture, fisheries and food for England, the secretary of state for Scotland, and the secretary of state for Wales. It consists of a chairman and up to nine members appointed by the Crown. Four commissioners, the director general, and three who are responsible for finance, forestry, estate management, harvesting and marketing, are full-time executive appointments. In addition, the act requires that at least three of the persons appointed have special knowledge and experience in forestry, at least one has scientific attainments and technical knowledge, and at least one has special knowledge and experience in the timber trade.

The commissioners are advised on all aspects by the Home Crown Timber Committee, that was established in 1951, and comprises up to 25 members representing woodland owners, the forest industry, professional foresters, agriculture and land use, and nature conservation.

The F.C. operates through eleven conservancies, and for each of these a regional advisory committee of up to nine members is authorized to advise the conservator of the nine members, four are appointed by the commissioners after they have consulted with the representatives of woodland owners, timber merchants, and forestry organizations in each conservancy.

The Forestry Act [1967] gives the F.C. the power to control the felling of trees on all land. This, coupled with its authority to support production of timber with grants given to landowners, is the basis of state authority over private woodlands.

Control of Felling:

Under the Forestry Act, there are 28 sections dealing with the Forestry Commission's authority to control felling through restriction and direction. Normally, a felling license is required by a landowner for the felling of any trees for commercial use. In certain instances, felling licenses are not required where control is exercised through the approval of management plans. A felling license may, and in the case of large areas usually does, have conditions attached requiring the restocking of the cutover area and the maintenance of the new trees. Felling licenses, issued by the regional conservator, were introduced in World War II and have remained in effect ever since.

Under the Forestry Act, an owner may fell up to 30 m^3 (10.6 cunits) of timber in any quarter of the year without a license, provided that not more than 5.5 m^3 (1.9 cunits) of this amount are sold. As of 1980 it was proposed that the act be amended to remove this restriction.

Grant Schemes:

Although various forms of assistance had previously been available to private owners, it was not until the Dedication Scheme was introduced in 1947 that a major incentive was set in place. Under this scheme, an owner enters into a covenant with the Forestry Commission, which is registered against the land and successive owners committing the land to forestry. The owner also agrees to manage his woodlands in accordance with a plan approved by the F.C. This second covenant is personal to the signatory of the owner and upon change of ownership, it is either released or else it is not enforced.

Until 1972, two schemes (Basis I and Basis II) were in place. Basis I consisted of a grant of 25% of the approved net annual expenditure for planting, together with loans where the amount to be fixed was with reference to individual circumstances and at the same rate of interest as the financing of the Forestry Commission. Basis II grants of fixed amounts were made for planting and maintaining planted and other forests. By 1970, the area of private woodlands under the Dedication Scheme was just over 405 000 ha (1 000 000 acres). In 1974, a Basis III scheme was introduced with modified objectives and emphasis on integration with agriculture and environmental safeguards. The basic grant of £100/ha (£40.5/acre) was for planting conifers and £225/ha (£91/acre) for broad-leaved species. In 1977, a management grant of £3/ha (£1.2/acre) was made payable annually in arrears for conifer plantations under 25 years old and broad-leaved species under 50 years of age, providing the plantings had been established with F.C. grants. Grants were applicable only to areas 10 ha (25 acres) or greater.

In recognition of the fact that small woods are important for their aesthetic, conservation, amenity, and timber production values, the Small Woods Scheme was introduced in 1977. Participating owners with woodlands of 3 ha to 10 ha (7.4 to 25 acres) could receive grants of £300/ha (£121/acre). Seventy-five per cent of the grant was payable following satisfactory planting of an approved species, and the balance was paid five years later following satisfactory establishment. No dedication was involved. Basis I and II Schemes were closed in 1972 as were the Basis III and the Small Woods Schemes in 1981. However, in all these schemes, existing contracts, and the time of closing were continued.

As of October 1981, the Forestry Grant Scheme was introduced. Several reasons may be given for this change, but the principal one was the increasing costs and relative complexity of administering the Dedication Scheme. There is no doubt that the objectives for which the schemes were undertaken, i.e., to increase and improve the area of productive forests, have been largely met. The annual rate of planting on private lands rose from 8518 ha (21 048 acres) in the 1950s to a maximum of 24 010 ha (59 329 acres) in 1971-72, but has declined since then. By 1977-78, it was back to the level of the 1950s at 8299 ha (20 507 acres). The new Forestry Grant Scheme is for areas of 0.25 ha (0.6 acres) or larger and is applicable where timber production is the primary objective. Grants paid for planting, with a differential between conifers and hardwoods and in relation to area size, are summarized in Table 57.

TABLE 57

GRANTS PAYABLE FOR PLANTATION ESTABLISHMENT

Area in Hectares (Acres)	Grants Payable for Conifers per Hectare (Acres)	Grants Payable for Broad-leave Species per Hectare (Acres)
0.25 - 0.9 (0.60 - 2.2)	$1500 (607)	$2125 (860)
1.0 - 2.9 (2.5 - 7.2)	1200 (486)	1750 (708)
3.0 - 9.9 (7.4 - 24.5)	1000 (405)	1500 (607)
10.0 and larger (24.7 and larger)	$575 (233)	1125 (455)

£1 = $2.50 CAN.

Eighty per cent of the grant is payable when land has been planted or adequately stocked from seeding or natural vegetation. Twenty per cent is payable five years after the date of payment of the first installment provided the plantation has been properly maintained.

The owner must perform work according to a five-year plan approved by the F.C. This Forestry Grant Scheme does not require dedication and is applicable to tenants, providing the owner is a signatory as well as the tenant.

Taxation:

The owner-occupier of new or young woodlands can elect to be assessed for income tax under Schedule "D". Under this schedule, annual costs of crop establishment and maintenance can be set against income from other sources before that income is assessed for tax. However, costs of work of a capital improvement nature may not be treated as annual expenditures, but rather are set against income at the rate of 10% for 10 years, or 20% for the first year and 10% for each of the succeeding eight years.

Transfer of an estate upon death or as a gift is subject to a capital transfer tax. This tax may be payable at the time of transfer; or the new owner may elect to defer payment, if the timber is immature, until such time as the timber may be felled. Rates of tax vary considerably ranging from 10% to 75% at the time of transfer. Usually, because of increases in the value of timber with age and inflation, rates of tax paid when a deferment is elected are usually considerably higher.

Scandinavia [Norway, Sweden, and Finland]

Probably more comparisons have been drawn between forestry in Canada and one or another of the Scandinavian countries than with any other country, except possibly the United States. For this reason, it is appr priate to review the essential features of private land forests in Norway, Sweden, and Finland. The most obvious difference between these countries and Canada is that from a cultural, political and economic standpoint, Scandinavians view the forest as an integral part of their national fabric. Their forests have passed through a period of exploitation and, as one Finnish person stated, "our country is a forested one, if we don't make the best use of it and manage it properly, we will have very little left." The result has been that since the early 1900s, the state has taken a dominant role in regulating forestry practices on privately owned lands.

Norway

Norway has approximately 2 531 250 ha (6 250 000 acres) of forest land, 96% of which is owned by 131 708 individual owners.

To ensure the management of forest lands, the government's role is threehold:

(i) to enforce regulations;
(ii) to assist landowners in carrying out their management activities;
(iii) to subsidize landowners in forest management.

The Department of Forestry is within the Norwegian Ministry of Agriculture. Under this department, there are 17 county forestry boards each with a county forester in charge. Of great importance are the Forest Owner Federations which are cooperatives of forest owners who offer assistance in forest management, harvesting, and marketing.

Enforcement of government regulations is done by the county forestry boards. The regulations and laws are aimed at maintaining productive forest land within the community. Generally, farm lands and forest lands are not sold on the open market; but if a farm is sold, it is customarily sold intact.

Prices for timber are negotiated between the forest industry and the Forest Owners Federation and apply nationally. When timber is sold, approximately 10% of the gross value of the sale must be deposited by the district forestry board into a special account and can only be used by the owner, whose timber was sold, for forestry work on his land. No interest is paid on the account to the owner, but does accrue to the district forestry board. There is, therefore, a strong incentive for the owner to use the levy. Furthermore, the levy is tax-free and is tax-deductible at the time it is used. In 1980, use of the levy was primarily for roads [42%] and forest cultivation such as site preparation, regeneration, and tending [42%]. There is also a government subsidy program for road construction which amounts to approximately 50% of the costs.

Income from forestry is treated as ordinary income but averaged over each five-year period. Reforestation costs are deducted for the taxation year in which they were incurred. Taxation rates are high and often act as a disincentive for an owner to harvest timber.

In Norway, the public has the right of free access to private forest lands, and this relates to the general perception by the people that forests are a national rather than a private resource. These rights are applicable to all three Scandinavian countries.

Sweden

Of 238 950 km^2 (59 000 000 acres) of productive forest, about half are owned by 240 000 owners, one-quarter by forest companies, and the remaining quarter is in public ownership of one form or another. Although economically forestry and agriculture rank about equal, and three-quarters of the farms include a forestry component, only about 7% of the total Swedish labour force works in forestry-related industries. This may be compared to Ontario where 8% of the total manufacturing employment is in wood, paper, and allied industries.

Sweden set new guidelines for forestry with the Forest Act which came into effect January 1, 1980.The overall aim is stated:

> By means of proper utilization of their wood-producing capacity, woodlands and the forest on them should be managed in such a way as to provide a permanently high and valuable timber yield. This management should pay heed to nature conservation and other public interest. [Article 1]

The timber yield that has been set as a goal is presently 75 000 000 m^3 (26 475 000 cunits) per year.

The act applies to all woodlands, irrespective of ownership, that have an annual production capacity of 1 m^3/ha/yr (14.3 ft^3/ac/yr). Regulations under the act deal with forest practices relating to establishment and regeneration of stands, tending, harvesting, projection, incentives, and conservation aspects. Sweden recognizes in principle that the basic obligations of the act should be met by the owners, but that the government, in attaining its overall objectives which go beyond these basic obligations, will have to provide subsidies for both silvilculture and roads. Grants or subsidies for forestry activities, including road construction, vary with the location and nature of the activity but cover from 30% to 90% of costs. Table 58 shows the percentage of costs covered by grants for certain activities.

TABLE 58

SWEDISH GOVERNMENT GRANTS AS A PROPORTION OF COSTS FOR FOREST MANAGEMENT ACTIVITIES

[Grants vary with geographic location]

Activity	Percentage of Costs Covered by Grants
Planting on abandoned farm land	50
Regeneration after cutting understocked stands or stands with unsuitable species:	
Private	30 - 70
Other	50
Completing stand establishment	0 - 50
Cleaning or tending:	
Private	0 - 70
Other	60
Road construction	60 - 70
Preparation of forest management plans	50

A silvicultural fee has been instituted which is three mills based on the forestry value of the property.

The Forestry Act is administered by a National Board of Forestry that is under the jurisdiction of the Ministry of Agriculture. The actual implementation of policy is carried out by 24 county forestry boards whose activities are directed and coordinated by the national forestry board.

The county forestry boards undertake the following tasks.

(i) Activities financed by public funds:

These include implementation of the Forestry Act; administration of subsidies for silviculture and road construction; preparation of management plans; participation in national planning; provision of extension services to forest owners and others; provision of general forestry information.

(ii) Contractual services:

These include the supplying of seeds and seedlings; performing forest management tasks for owners such as timber marking; preparing management plans; giving assistance to other public authorities such as relief work, conservation activities, etc.

A county forestry board is made up of a chairman, two members nominated by government, three members nominated by the county council, and a county forest officer who is the chief executive officer of the board. More than 60% of its work is directly financed by the owners from service charges; the rest is indirectly financed from the silvicultural fee or levy. The number of persons employed by the national forestry board is between one and two hundred, whereas collectively the 24 county forestry boards employ several thousand.

In addition to the boards, there are Forest Owners Associations which are cooperatives primarily concerned with the marketing of forest products. Many of these associations also have their own manufacturing facilities and may provide advice on harvesting and silviculture to members. Lastly, the management and administration of forests owned by certain municipalities and foundations in undertaken by the Forestry Society. This is a non-profit organization that was established in 1912 to promote better silviculture practices and to reforest heath lands and barren areas in southern Sweden. The organization has, in effect, become a forest land management agency for approximately 405 000 ha (1 000 000 acres) of which only 15 390 ha (38 000 acres) is owned by it.

County forestry boards were first proposed in 1899 but did not come into existence until 1905. The central agency, the National Board of Forestry, was not established until 1941.

Taxation in Sweden has had the effect of being a disincentive to harvest mature forests. However, there are certain provisions that encourage the owner to reinvest in forestry. A landowner can postpone taxation on forestry income by transferring up to 60% of the income from sales of standing timber, and 40% of the income from sales of products sold or used, to a controlled bank account. Nevertheless, the high rate of taxation creates a reluctance, particularly on the part of the forest-owner farmer, to harvest mature timber. These owners usually also receive a high degree of subsidy from government for their agricultural operations. Currently, the matter of taxation and its effect in tying up mature timber is receiving much attention.

Finland

In Finland, productive forest land covers 63% of 19 200 000 ha (47 443 200 acres) of the total land area. Private owners, other than companies, account for 56.8% of the forest land; companies own 6.9%, and the state and local authorities own the balance of 36.3%. There are some 245 000 owners, each owning more than 10 ha (25 acres) of land. Private owners control 71% of the growing stock volume and their forests contribute 76% of the annual growth. The reason for this greater amount in proportion to the area of forest land [56.8%] is that the private lands are mainly in the central and southern areas where climate and soils are most favourable. Here, the forests on the average are younger, with corresponding high growth rates.

Systematic promotion of private forestry dates from 1907. Finland's legislation is contained in two laws—the private forestry law and the forest improvement law. Although these laws have been amended with time, they have essentially been in place for over 50 years. The Forest Management Associations Law regulates the activities of the owners and associations, particularly with respect to financial obligations relating to forestry practices and regeneration.

The National or State Board of Forestry operates under the Ministry of Agriculture and Forestry. There are two central forestry boards under the supervision of the state board and these in turn are subdivided into 19 district forestry boards, two of which are Swedish-speaking. On both the central and district boards, membership comprises individuals who are owners and representatives of forest industry and the forest worker's union. These central and district forestry boards have the responsibility of promoting private forestry and ensuring that the private forestry law is observed. The boards are essentially funded by the state. While the central boards are concerned with the supervision, guidance and promotion of the district boards, they also deal with program development, education, and development of cooperation together with the maintenance of statistics. The district forestry boards deal with the Forest Management Associations that are forest owners' associations, and at this level provide professional and technical assistance, undertake forestry projects, and produce seed and seedlings.

The Forest Management Associations, of which there are 382, are the key landowner groups. Their activities are governed by law, as already mentioned, and every forest owner whose annual yield is assessed in excess of 20 m^3 (706 cubic feet) is obliged to belong and pay a fee to the association in his area. The associations are to protect and promote the interests of the forest owner members and to improve private forestry. Marketing of forest products is one of their concerns. In doing this, the associations operate closely with other regional or central organizations such as the Central Union of Agricultural Producers.

Finland is unique in Scandinavia in that forest taxes and fees paid to the forestry associations are based on the productivity of the forest land. Therefore an owner pays yearly taxes based on the classification of his land's productivity and not on actual income. It is recognized that ability to pay taxes on this basis relates to the nature and degree to which a private forest can have merchantable timber for harvest. Thus a recently regenerated area is tax-free for several years. Low interest loans of 3% to 5% with repayment periods of 8 to 30 years are available to owners. If an owner harvests the timber himself, he does not pay any tax on the value of his work up to 150 m^3/ha/yr (2144 ft^3/ac/yr). Costs of regeneration are borne by a levy of 12% of the sale price of timber and thus are considered a part of the cost of each timber sale. The loans at 3% to 5% and, to a lesser degree, grants are available under the forest improvement law. For 1981 and 1982, the amount of money voted for improvements was $70 million [CAN.] for each year.

In 1965, a financing program was organized to increase forestry development, particularly in silviculture. This was known as the MERA program and originally was intended to have financing from both the state and private sectors. Thus, of the total silvicultural and forest improvement costs, 50% was financed by private forest owners, 20% from low interest loans, and 30% from public funds. During the period 1965-75, a total of 378.9 million mks [1975 value] were spent under the MERA program, of which 66% was on private and non-state or industrial company lands. The costs per hectare (2.5 acres) on private lands averaged 18.6 mks over the period which was equivalent to 12.6% of gross stumpage earnings. Although original targets were not achieved, the MERA program greatly stimulated intensified silviculture and forest improvement. In late 1972, further financing was obtained with a loan from the International Bank for Reconstruction and Development. Apparently, only 70% of the program's objectives were met with money from this source due to the ensuing oil crisis and inflation.

AUSTRALIA

Australia is not a forested country. Only some 6% or 43 000 000 ha (106 253 000 acres) of land are considered productive or potentially productive forest land. The majority of this land is found in the moist belts of the coastal areas, the near coastal highlands in the east and southeast of the continent, in Tasmania, and in the southwestern part of Western Australia.

The natural forests are dominated by 500 species of eucalypts, 100 of which are used in sawmilling. Although there are native conifer species, an imbalance has always existed between the supply of hardwoods and softwoods. Since 1876, conifers—primarily pines from North America—have been planted extensively in an attempt to increase the softwood supply. While conifer plantations constitute only one per cent of the total productive area and fully one-half are still immature, these plantations contribute nearly 30% of the sawlogs and veneer logs and 20% of the total 13 000 000 m³ (4 590 950 cunits) of roundwood produced each year.

Like Canada, the bulk of the forests are on Crown lands and the responsibility for control of their exploitation and management resides with each state. No Australian state has, until very recently, exercised any form of control over forestry on private lands, nor has any state effectively supported private land forestry. Recent developments in Tasmania, however, are an exception and will be described later. At the Commonwealth or national level there is no comprehensive forestry legislation. Beginning in 1967, the Commonwealth government made monies available under agreements to assist the establishment of softwood plantations on both state and private lands under a program agreed to by the states, and designed to make Australia self-sufficient for wood early in the next century. Support was given in the form of loans, repayable with interest. These softwood forestry agreements, while helpful, are not considered to have had a very significant effect.

In New South Wales, Victoria, and Tasmania, the forestry agencies are incorporated forestry commissions, the heads of which report either to a forestry or forest minister or, as in Tasmania, directly to parliament.

Tasmania

Tasmania appears to have advanced the most in giving attention and support to private forestry. This is not surprising since both state and private forests account for 30% of the gross value of all primary production in the state, 30% of all value added in the secondary industry, and more than 70% of all export tonnage.

Forests constitute 40% or 2 800 000 ha (6 918 800 acres) of the total land area, of which 36% or 1 000 000 ha (2 471 000 acres) is privately owned. Private forests contribute 40% of the hardwood pulpwood and 25% of the sawlogs cut in the state.

In 1976, Tasmania established a board of inquiry into private land forestry. It was founded out of three concerns: that increasing volumes of wood chips, primarily from private forests, were being exported to Japan; that the balance between wood harvested and forest growth was critical; and that the importance of the wood-using industry was being recognized. In August 1977, the Tasmanian government accepted and implemented the recommendations of the board. This was effected by legislature which amended the Forestry Act of 1920. The new legislation:

(i) established within the Forestry Commission a Private Forestry Division under an assistant commissioner;

(ii) established a Private Forestry Council to complement, primarily on an advisory basis, the private forestry division;

(iii) provided for the Forestry Commission to "enter into and carry into effect agreements for rendering financial assistance [whether by way of a grant or loan or otherwise] for the purpose of assisting the establishment, development, or proper management of private forests or the utilization of the produce thereof."

The board stressed that a forest practices act, binding on the Crown to establish proper standards of management and based on a classification of forest lands and water courses, should be put in place. Such legislation has not yet been established.

Under the Forestry Act, the Forestry Commission revenues (mainly from stumpage and royalties) are paid into a state consolidated revenue. The appropriation of all proceeds are placed in a forestry fund for use by the F.C. for operating expenses the year following. Forestry Commission capital expenses are met mainly by loans to the F.C. from the state treasury. Interest on these loans is paid to the state from the forestry fund as part of operating expenditures. The principal of the loans is not paid back but becomes a debt of the state. The Forest Act [1977] directs that operating expenses of the new Private Forestry Division and Private Forestry Council be provided out of monies specifically granted by parliament and not from the forestry fund. Any revenue received will be paid into consolidated revenues and does not become part of the forestry fund. In this way, state intervention is separated fiscally from the state forestry enterprises.

There are several financial assistance schemes available in Tasmania as a result of the establishment of the Private Forestry Division.

(i) Grants:

There are four types of grants currently available. The Native Forest Restoration Scheme is aimed at renewing areas cutover before 1978 that have failed to regenerate. Lands owned by major industrial companies and their subsidiaries are not eligible. Grants are for up to 100% of the costs of seed, seeding, site preparation, and fuel preparation for burning. The owners who receives a grant must enter into an agreement to follow a plan and to refund the cost of the work in the event of a failure attributable to the owner's poor husbandry or wholesale removal of the crop.

The eucalypt plantation grant is made for up to 50% of the costs of establishing and tending certain eucalyptus species. Grants are allocated up to a maximum of A $300/ha (A $121/acre) for actual costs of A $600/ha (A $242/acre). An owner must have at least 5 ha (12 acres) and the grant only applies to certain geographic areas. At present, these grants are not available to major forestry organizations. A forestry dedication covenant is registered against the land title to ensure the forest reaches harvest maturity. An owner receiving a grant of this type must also enter into an agreement to carry out the plan of management.

The special species plantation establishment grant is available to owners who want to plant 0.4 ha (1 acre) or more of hardwood species best suited to farm forestry. Plantations of more than 20 ha (50 acres) require special approvals, and a dedication covenant is only required where the area exceeds 5 ha (12 acres). Neither eucalypts nor conifers are covered by this grant scheme.

The nursery stock grant applies where seedlings are purchased for approved forestry projects and for which other grants or loans may be made. Owners obtain a 50% reduction in the price of seedlings. If, after inspection, the Forestry Commission determines that the trees were not established in accordance with its advice, the owner may receive an invoice for the balance of the cost of the trees. Areas must be at least 0.4 ha (1 acre) and a minimum of 40 m (44 yards) wide. Areas greater than 100 ha (247 acres) require special F.C. approval.

(ii) Loans:

Pine plantation development loans are aimed at encouraging the establishment of radiata pine plantations on a commercial scale. Low interest loans for up to 80% of the costs of establishment and tending to a maximum of A $480/ha (A $194/acre) are available to landowners only in specified zones.

(iii) Annuities:

The Pine Plantation Annuity Scheme is aimed at encouraging owners to establish pine plantations. It is directed towards farmer owners and is an attempt to provide an annual income to the farmer rather than have him wait until his crop matures. The owner may also receive a nursery stock grant or a pine plantation development loan. For the first ten years, the annuity is A $50/ha/yr (A $20/ac/yr); thereafter it becomes an annual figure based on 75% of the expected harvest value, discounted appropriately. It applies to farmer owners specifically growing pine who intend to plant between 10 ha and 100 ha (25 and 250 acres) at a rate of not less than 2 ha (5 acres) per year. The owner must insure the plantation and enter into an agreement outlining the plan of operations by which the plantation is to be managed. A forestry dedication covenant is registered against the land title.

Annuities are for any period up to 30 years and payments terminate one year before the final harvest. The interest rate used is the state's rate of interest. At five-year intervals or after any sale, the annuity will be adjusted to reflect inflation, interest rates, and the value of the timber.

The Private Forestry Division arranges the sale of timber after consultation with the landowner, and receipts for thinnings and final harvest are apportioned in accordance with the terms of the agreement. By these terms, the Forestry Commission recovers the payments made plus interest from the proceeds, and the owner receives the remainder.

Thus by a system of grants, loans and annuities, Tasmania is endeavoring to restructure its forest productivity by the small private landowner, and in particular, farmer groups.

NEW ZEALAND

There are 7 000 000 ha (17 297 000 acres) of forests in New Zealand of which 70% are in state forests and national parks and 24% or 1 500 000 ha (3 706 500 acres) are under private and local authority ownership.

From 1850 until well into this century, the indigenous forest which covered two-thirds of New Zealand was exploited and cleared primarily for agriculture. Much land that was cleared was unsuitable for agriculture, and following World War I there was a surge in planting these lands with conifers, particularly radiata pine. Between 1923 and 1936, 150 000 ha (370 650 acres) were planted by the state, and 120 000 ha (296 520 acres) were planted by private companies and individual landowners.

Following World War II, the ability of New Zealand's forests to meet the demand for wood was examined. As a result, the government undertook to double the area of exotics (mainly radiata pine) from 400 000 ha (988 400 acres) to 800 000 ha (1 976 800 acres) by the year 2000. This would be achieved by doubling the rate of planting on state lands and by offering financial incentives to local authorities and private landowners. The extent to which the target has been achieved is reflected by the fact that there are 729 000 ha (1 801 359 acres) of exotic forests [plantations] of which 52% or 381 000 ha (941 451 acres) are owned by the state and the balance by private and local authorities. In 1976, New Zealand produced 8 300 000 m^3 (2 931 145 cunits) of roundwood of which 7 300 000 m^3 (2 577 995 cunits) came from plantations of exotic conifers. Of the total roundwood produced, 4 000 000 m^3 (1 412 600 cunits) came mainly from conifer plantations on non-state or private forest lands.

The New Zealand Forest Service is a department of the government with a director-general of forests who is responsible to the minister of forests. The legislative authority under which the Forest Service operates is the Forests Act of 1949. This act, while defining a broad spectrum of areas, does not provide for the regulation or control of private forestry, yet the Forest Service does deal with private forest landowners in many ways.

The significance of wood production from the private sector has already been indicated. These forests, comprising nearly half of the exotic plantations and a fifth of the indigenous forests, show two different types of treatment: the exotic forests are productive and well managed, whereas the indigenous forests are exploited in a virtually unchecked way.

Although the state has no direct authority over the management of non-state lands, the Soil Conservation and Rivers Control Act does give the state authority to regulate the cutting of trees in water catchment areas, regardless of ownership. In addition, the New Zealand Forest Service has for many years provided technical assistance to owners, particularly those involved in establishing plantations. The service also has an active extension program which administers the two financial encouragement schemes and provides advice and technical help to owners. Finally, the Forest Service is authorized to act as an agent for the owners of non-state forest lands and in this capacity can establish, manage, and protect their forests, as well as market forest products.

In New Zealand, large tracts of plantation forest are owned by forest industries. These lands are usually well managed and do not qualify for support under the state forestry encouragement schemes for private forests. The non-state owned lands that qualify, are lands owned by private individuals, local authorities, and forestry companies whose only business is growing wood and not industrially converting or manufacturing it.

Presently, there are two types of forestry encouragement schemes. Forestry loans, available since 1970, are only made to local authorities; however, from 1962-70 they were made available to local authorities, forestry companies and individuals. The purpose of the loans is to encourage the creation and tending of plantations to produce timber. The loans presently are for NZ $450/ha to NZ $1200/ha (NZ $182 to NZ $486/acre) and can apply to minimum aggregate areas of 2 ha (5 acres) [no part may be less than 0.5 ha (1.24 acres) in area]. There is no maximum area but loans for areas larger than 40 ha (100 acres) require the minister of forests' approval. Loans are registered against the title of the lands and are for 30 years or longer. Interest rates are 7% [6.5% to cover the debt and 0.5% for fire insurance]. Where an area of forest to which a loan applies is to be reforested after clear felling, 20% of the revenue obtained must be set aside by the local authority for reforestation.

Since 1970, forestry encouragement grants have been made available to forestry companies and individuals but have specifically excluded local authorities. Former loans entered into between 1962 and 1970 by individuals or forestry companies may continue in force or be converted into grant agreements. Under the existing forestry encouragement grants scheme to individuals and forestry companies, annual grants for up to half of the amount of qualifying expenditures are made year by year for the establishment and tending of approved forest projects. The sum of NZ $300 000 is the maximum annual expenditure where a grant of 50% is payable. Thus, a forestry company, whose annual expenditure on all of its forestry projects [including those which could qualify for grants] exceeds NZ $300 000, is not eligible. The maximum grant for each establishment area for a full crop rotation, i.e. from initial establishment through tending to final harvest, is NZ $750/ha (NZ $303/acre). Thus areas where the total expenditure is greater than NZ $1500/ha (NZ $607/acre) do not qualify.

The expenditures qualifying for grant aid are primarily those that a forestry company or individual may claim against current income under the New Zealand and Income Tax Act. The effect of the grants is aimed at giving the owner a financial incentive. Thus, normally a forestry expenditure of NZ $1000 could be set against taxable income, and if the tax rate were 30%, the item would be worth NZ $300 in reduction of tax payable. If the owner receives a grant of NZ $500 for the NZ $1000 expenditure, he does not claim for the NZ $1000 in his tax return, nor is the NZ $500 declared as income. The original expenditure of NZ $1000 is worth NZ $500. The owner receives the equivalent of a tax reduction in advance at the same money value as the expenditure incurred, and he has only half of the qualifying costs carried forward at compound interest.

The Forest Service in New Zealand administers forests through seven conservators. Each conservator approves grants for individual projects up to 100 ha (250 acres). The director-general must approve projects between 101 ha and 200 ha (250 and 500 acres); the minister of forests approves projects between 201 ha and 400 ha (500 and 1000 acres); and the minister of finance approves projects of greater than 400 ha (1000 acres).

Before an owner submits his claims for a grant, they must be certified by a chartered accountant. Certified claims are then checked by the Forest Service, which arranges an inspection prior to payment. Copies of all paid claims are then sent to the Department of Inland Revenue. Although data for the number of projects under grants and loans are not noted separately, as of 1977 there were 1700 projects for an area totalling 97 000 ha (242 500 acres).

JAPAN

Forests cover 68% or about 25 000 000 ha (62 500 000 acres) of the total land area. There are four major forest zones: sub-frigid / alpine, cool temperate, warm temperate, and sub-tropical. All but the first have undergone major exploitation over past centuries and today, 36% or 9 000 000 ha (22 500 000 acres) of Japan's forests are man made.

Of the total forest area, private forests comprise 59% or 14 800 000 ha (37 000 000 acres), national forests comprise 31%, and other public forests comprise 10%. Of private ownership, 67% of forest lands are owned by individuals (farmers and non-farmers), 10% by companies, and the remaining 23% by partnerships, joint holdings, cooperatives, associations, shrines and temples.

In spite of an increasing demand for wood, domestic production has declined and stagnated since reaching a peak of 53 000 000 m³ (19 000 000 cunits) in 1967. Production declined to 35 000 000 m³ (12 000 000 cunits) in 1975. By 1977, the volume of logs harvested was 29% less than in 1970. The reduction in domestic production is attributed to several factors:

(i) the lack of forest resources to harvest, because 70% of the plantations are under 20 years of age;

(ii) the increasing costs of production compared with timber prices. [Over 20 years the wage rate for silviculture has increased tenfold whereas the stumpage for sugi [Cryptomeria japonica] has only increased fourfold. During this same period, the average internal rate of return has decreased from 8% to 4%.];

(iii) the incresed levels of imports of cheaper timber from abroad [mainly Southeast Asia and North America].

Japan's forests have been environmentally designated into one of several major categories. As of 1977, 28% or 7 140 000 ha (17 600 000 acres) are designated as protection forest. This is subdivided into 5 300 000 ha (13 100 000 acres) for water source conservation, 1 800 000 ha (4 400 000 acres) for disaster prevention [landslides, floods, etc.], and 100 000 ha (250 000 acres) for recreation and protection of scenic beauty. In addition, a further 4 100 000 ha (10 100 000 acres) of protection forest are included in the national parks. About half of the protection forests, including those in national parks, are privately owned. Although the owners are indemnified by real estate tax exemptions and compensation payments, these measures are considered inadequate since forest practices, particularly the harvesting of timber in protection forest and national parks, are severely regulated.

Responsibility for forestry lies with the national government and is administered by the Forestry Agency [F.A.] of the Ministry of Agriculture, Forestry and Fisheries. The Forestry Agency is large, with some 39 000 employees and has ten regional offices, four regional branch offices in Hokkaido, and some 342 district forestry offices. The regional and district offices constitute a National Forest Service within the F.A. and are directly responsible for the management of the national forests. The National Forest Service operates under a special financial system separate from the F.A. budget, that is intended to place it on a self-sustaining commercial basis. For six of the 13 years prior to 1977, it operated at a profit. Following a major loss of $540 million [CAN.] in 1977, however, a ten-year program to improve business management was put into place.

Japan is divided into province-like prefectures. Each prefecture has responsibility for many areas of public concern, such as agriculture and forestry, yet they are clearly creatures of the national government and their authority stems from national legislation. The various subsidies, grants, loan schemes, and cost-sharing arrangements, that are part of a prefectures' activities, are mostly extensions of the national government.

Two national laws specifically address forestry. The Forest Law deals with the conservation and cultivation of the forest resource, the safeguarding of the land, and the provision for planning, protection and other basic matters. The Forestry Basic Law provides for fundamental measures relating to the promotion of forestry. In accordance with this law, two documents, the Basic Forest Plan and the Long Range Prospect Regarding Demand and Supply of Important Forest Products, were developed by the national government. On the basis of these documents, the minister of agriculture, forestry and fisheries established a national forest plan for a 15-year period, that is normally revised every five years or whenever a new basic forest plan is adopted. Within the context of the nationwide forest plan, each prefecture governor draws up a regional forest plan for a ten-year period that applies to non-national and private forest lands. Owners are under an obligation to observe the regional forest plan, but are not compelled by law to do so. Individual owners voluntarily submit their own forest plans to the governor for approval, and if they manage in accordance with the approved plans, they receive preferential treatment with respect to taxation and subsidies.

The system of national government subsidies to private forestry is complicated, but appears overall to be generous. Recently, the current annual budget of the Forestry Agency was $2 billion [CAN.] of which three-quarters was spent in the form of subsidies of one kind or another. About 84% or $1.25 billion [CAN.] was provided for subsidies through public service projects. There are three major projects of this type:

(i) Land Conservation Project:
Approximately $625 million [CAN.] have been spent on maintaining forest cover on mountain sides and rehabilitating mountain lands devastated by floods and landslides. Projects on private lands are planned and undertaken by prefectural forestry agencies working through private contractors. One-third of the cost is paid by the national subsidy and the remainder is paid by the prefecture, i.e. at local government level.

(ii) Reforestation Project:
Thirty per cent of the costs of regeneration or improvement of man-made forests, the restoration of flooded or devastated lands, and tending [including thinning costs] are subsidized. Where infertile land is afforested, 50% of the costs are subsidized. Stand tending practices presently receive a major portion of these subsidies.

(iii) Forest Road Project:
Up to 66% of the costs of road construction [and sometimes maintenance] may be subsidized. These funds are normally not paid to individual owners but are routed through public development corporations, prefectural governments, forest owner associations, and municipalities. Private forest owners pay the balance of the costs. It should be noted that all forest roads in Japan are open to the public.

The balance of funds from the Forestry Agency subsidy program are used for non-public service projects.

(iv) The Forestry Structure Improvement Project:
Provided for under the Forestry Basic Law of 1964, the project is intended to rationalize and reform private industry by the reorganization of forest owner associations, the training of forest managers, the promotion of forest conservation, the expansion of the base of forest production, and the promotion of mountain villages. National subsidies cover half of the costs and are distributed through the prefectural forestry agencies which, in turn, distribute these and work directly with the owners [including municipalities] and owner associations. The prefectures may add subsidies of their own to projects.

(v) The Forest Pest and Disease Prevention Project:
This provides two-thirds of the cost to prefectural forestry agencies for pest control and prevention on private lands. The actual operations are usually contracted out commercially or to the owners.

(vi) The Forest Production and Distribution Project:
This provides half the costs to prefectural agencies for support of projects of forest owner associations, forest industry associations concerned with improving forest management and harvesting equipment, the collection of seed, improvement of planting stock, and technical guidance for owners in thinning and stand improvement.

(vii) The Extension and Guidance of Forestry Techniques Project:
Each year this project has the objective of improving the level of forestry practice by transfer of technology and extension work. National subsidies pay half the cost of support of extension specialists and village agents.

In addition to the comprehensive program of subsidies from both the national government and the prefecture, direct long-term loans are made to individual owners for construction of roads, planting, and thinning at interest rates of 3.5% to 6%. Prefectural governments may make direct loans for three to five years at no interest to individual owners to help them defray costs of thinning and for the purchase of improved equipment such as chain saws. Funding of the loans from the prefectures usually comes from Forestry Agency subsidies.

Under national legislation, a Forestry Credit Fund Corporation exists funded by the national government, prefectural governments, and the owners themselves. The owners' subscriptions are related to the amount subscribed by the prefecture where the owner lives. The corporation provides loans or security for loans for forestry purposes.

Mention has been made of the forest owners associations. There are approximately 2000 of these associations involving about two million members who collectively own 12 000 000 ha (29 652 000 acres) of forest. Over the years, the national government has actively encouraged the formation of associations and the grouping of small associations into larger ones. This reflects a concern for the high degree of fragmentation of forest ownership. For example, of the 2 854 000 owners of more than 0.1 ha (0.25 acres) of forest, 55% own less than 1 ha (2.5 acres).

A typical association consists of a president and board of directors, all of whom are forest owners. There is a full-time executive director and a staff. On behalf of its members, the association undertakes marketing of forest products, logging, purchase of planting stock and equipment, planting, and road maintenance, all for a fee or based on actual cost. It negotiates and handles subsidies and may make loans to members at low interest rates. Financing of the association is from government subsidies, profits from its operations, and membership fees which are usually quite low. Forest owners associations are linked in regional and national groups, and are consulted by national and prefectural governments in matters concerning private forestry. Representatives of the national association of forest owners associations serve on a national council under the director-general of the Forestry Agency. Similarly, representatives of regional groups serve on six regional councils, and representatives of individual associations serve on each of the 47 prefectural councils concerned with private forests. Extension programs are regarded as one of the most important aspects of private forestry, and throughout Japan 500 forestry specialists and over 2000 village agents work in prefectural forest agencies with private owners. The program, begun in 1949, has expanded dramatically, and emphasizes working with forest owners associations as well as individual owners. The forestry specialists work closely with both the National Forestry and Forestry Products Research Institute and prefectural forestry research groups; the latter are primarily concerned with practical problems at the local level. Each prefecture has about 12 specialists at its Forestry Agency headquarters.

X. PRIVATE LAND FORESTS IN RETROSPECT

There are many benefits that a state or society receives from forests on privately owned lands. Essentially, the direct benefits relate to forest products which are produced and the indirect benefits related to the conservation role of woodlands that result from trees and forests being part of a productive landscape. These values or benefits to the state may also provide significant economic as well as social benefits.

Once this basic assumption is accepted, as it has been in many jurisdictions including Ontario, a series of questions may be posed. What role should a state play in private land forests? How should this role vary, if at all, with ownership, type of forest, area, location, and time? What responsibilities should be undertaken by the state at different levels and by the private sector? These questions cannot be answered in this paper, yet a major part of the basis for developing answers and, to some extent, redefining these questions is available in the material which has been presented.

While there may be a multitude of objectives associated with private land forest, there are three main categories which relate to the state. These are the production of timber; the rehabilitation or protection of the landscape and environment; and the provision of forests to facilitate, sustain or enhance other uses which may be economically productive or otherwise.

None of these categories is mutually exclusive. The management of a southern Ontario woodlot for sawtimber also maintains a landscape feature and provides opportunities for other uses. The reforesting of sandy wastelands in southern Ontario, begun some 60 years ago, has not only resulted in productive forests but in other benefits such as recreational uses and landscape enhancement. The management of a forest to maintain certain ecological conditions may, and in many instances should, result in timber production as a necessary by-product of such management. What is clear is that policies and programs designed to achieve one particular category of objectives may with time become no longer relevant or become relegated to a secondary or lower priority. Once wastelands are successfully reforested and the initial objective has been accomplished, the management of the lands must be directed towards objectives such as timber production and recreational or other uses. Furthermore, the market place and society's attitudes and understanding may be quite different when objectives for the established forest are being set than when the wastelands were being reforested.

The position of the state in relation to private lands will reflect its own objectives and also take into account the nature, extent, and location of the lands as well as existing cultural and historical factors. The market place for forest products is obviously a key thread that runs through any consideration of the fabric of private land forests, and this is readily shown in the examples from other provinces and countries.

In the majority of countries considered, there are four basic ownerships. In Ontario, these are the state, which holds Crown lands, municipal or regional lands as represented by agreement forests, corporate and industry lands, and lands owned by private individuals. The objectives of these owners may be similar but usually are quite different. Moreover, the degree to which any one type of ownership predominates in a particular region will not only influence the objectives of other owners, but also the likelihood or ease with which these owners can achieve their objectives. For example, where Crown land ownership predominates, the stumpage values and markets for forest products from private lands will tend to be similar. The levels of return may be inadequate to provide the owners with suitable forest management to maintain their forests on a sustained yield basis. Forest lands owned by private individuals in areas where significant Crown ownership or large corporate holdings exist will inevitably be placed at a certain disadvantage in terms of timber production and may be in the position of residual buyers. This position can be changed where there is state intervention, as is happening in New Brunswick.

Conversely, where there exists a highly fragmented ownership, whether it be in terms of size and extent or in the municipality of individual owners, there is every indication that the state usually takes a firm position in either forest management programs or marketing or both, if the productivity of these lands is to be sustained and contribute economically.

The formation of associations of owners of various kinds, with government assistance in many jurisdictions, is one example of a manner in which such state support may be applied. There are virtually no associations that have been viable for any period without this support.

Two key features emerge, both of which are critical if private land forestry is to exist. One is the degree to which land is committed to the long-term production of forest and the second is the attitude and willingness of owners to take part in programs that will maintain, if not improve, the productivity of their forests.

The degree of commitment of land to forests varies greatly from one country to another. In many developed nations, this commitment is entrenched by legislation that uses zoning or offical use plans; this applies in Western Europe and Scandinavia. Elsewhere, more indirect methods have been used such as legal agreements. For example, in Ontario the Trees Act is not only optional but has a wide range of effectiveness depending upon the interest of the municipality in enforcing it. Commitment or dedication of lands to forests by legislation is not a major feature of many areas in North America.

Closely related in certain ways to the commitment of land to forestry is the nature and attitude of landowners. Individuals owning relatively small areas of woodland generally require greater incentives to commit their properties to forest management than do the owners of large tracts. Often the property is owned for reasons other than the purposes of timber production. Indeed, the Ontario landowner survey in 1981 showed that the most common motive for purchase of land was for agricultural purposes. However, there is also evidence both from this survey and others that where woodland exists on a property, uses will be found for timber if markets or needs arise. Both the 1981 survey on fuelwood use and data on farm use of timber substantiate this conclusion.

Responses of this nature by owners, to needs for wood, do not result in improved private forest productivity in the long run. While an owner may obtain financial benefit in the short run from timber sold or used under these circumstances, it is the growing stock of the woodlot that often suffers in the long run. The New England Pilot Fuelwood Project is a prime example of an attempt by the state to ensure improvement rather than degradation when increased demands are placed on private woodlands.

Attitudes of owners towards their woodlands, so that they recognize the need for management, are not easily changed. Orde-Powlett referring to the present and future of estate woodlands in Great Britain nearly 50 years ago stated.

> A real comprehensive improvement depends in the first instance in the arousing of forest consciousness among owners, and in providing them with means to acquire knowledge. That is the first step, the most important step, and the most difficult step.

Some of the most effective programs for arousing forest consciousness are those that use channels and means of communication already recognized and understood by the major landowner groups and which are credible. The agricultural extension programs of North America are excellent examples of not only how information on farming can be brought to an owner group, but also how the overall system allows for feedback from the owner to those who are involved in technology development and research.

As with agriculture, the development of strong information systems in private land forestry is linked in many jurisdictions to the presence of owner associations that function on a local or regional basis, or form part of a provincial or national grouping. In this manner, the owners can express concerns and exert influence in a way that would otherwise not occur. Some owner groups also exist on a product basis such as the Ontario Maple Syrup Producers and Ontario Christmas Tree Growers Associations. Organizations having a broad-based membership which includes private landowners such as the provincial forestry associations, would appear to offer a large opportunity for interaction between the state and forest-oriented segments of the public.

The effectiveness of the state relating to private forest landowners would appear to be much greater where both assistance and communication can be done through landowner groups and associations. In several jurisdictions, this also involves the landowner groups either hiring forestry staff or engaging private consultants and contractors to undertake planning and implementation of forestry. The use of private consultants and contractors has several advantages, but the main one is that it diversifies the base of expertise as well as technical and contracting capabilities, and therefore increases the probability of innovation and increased effectiveness. In doing this, it will also increase the competitiveness in the private forestry sector.

There is another aspect to the private sector, particularly as it relates to contractors undertaking harvesting, thinning, and other silvicultural activities. It has been a consistent observation that where there are no means to ensure that operations are both planned and undertaken to proper standards, both the woodlands and the owners will suffer in the long, if not the short, run. Essentially, this means that the state and society as a whole will be the losers.

Certain states have forest practices acts and other legislation that require owners of woodlands to observe standards and conduct specified practices such as regeneration. In some instances, this legislation is also coupled with a requirement that a portion of the proceeds of revenue from harvesting be committed to renewal of the forest. An alternative and sometimes complementary approach is to place the onus of responsibility upon the contractor undertaking the forest activity to ensure that the work done meets required standards. This is usually achieved by a licensing procedure which in itself may do little more than place an additional cost on the activity, require some form of policing, frequently provide frustration, and do little to improve the overall level of forestry.

Rather than use licensing, there is a middle ground. The provision of short upgrading courses, that form the basis for certification or qualification in meeting performance standards, might be used. Thus, qualified or certified contractors might be specified in a landowner's contract for work to be accomplished.

There is a further need for some degree of assurance that forestry practices should meet basic standards of performance, particularly where undertaken by those other than the owner. This is the necessity that the production of forest products from private land forests be documented annually. At present in Ontario, the only regular data on private land wood production is that derived from mill license returns. Yet surveys of private land forest owners and of fuelwood consumption indicate a signficant amount of wood being produced, primarily for non-industrial use, which is unrecorded.

For historical reasons largely related to pattern of settlement and land ownership, private land forestry programs have been mainly implemented in southern Ontario. There is no overall policy relating to private forest lands that recognizes the three major ownership groups: municipal and regional authorities, corporate and industrial, and non-industrial private. The size class and location of forest lands, as well as ownership, are obvious considerations in developing a policy for private forest lands.

For example, for non-industrial private forest lands, the large areas in northern Ontario that are accessible to major mill locations suggest that a program to increase conifer fibre production could have economic benefits in the medium and long run. Conversely, in southern Ontario there are areas where the need for shelterbelts and amenity forests is apparent, particularly in conjunction with farm ownership and agricultural activities.

The existing private land programs in Ontario have developed almost exclusively as provincial programs independent of federal involvement and only recently in conjunction with a company. The agreement forests over a 60-year period have shown how the province can, together with municipal and regional authority ownerships, develop highly productive forest for many uses.

This review of private land forestry programs shows that extensive forestry practices will not occur unless owners are given appropriate incentives. These incentives vary but consist either of direct financial aid or of the provision of free trees and management services. Many states put limits on these amounts or only pay a proportion of the costs. The use of interest free or low interest loans has been used successfully in several countries. Tax incentives for both property and income are common in many jurisdictions. It would appear that a full range of possible incentives and various combinations has yet to be considered for Ontario and Canada.

In the development of any future policy for private land forests, it would seem logical that although initiative and prime responsibility must rest with the province, other levels of government, related ministries and industry, forest owner groups or associations must be involved.

Although forestry accomplishments on private lands in Ontario during this century have been impressive, it is clear that we are now entering a period where there is a growing need to formulate new policies to meet the needs of our society in the future.

APPENDIX

Metric Unit		Canadian Yard/Pound Equivalent
1 cm (centimetre)	=	0.393 701 inch
1 m (metre)	=	3.280 84 feet
1 m (metre)	=	1.093 61 yards
1 km (kilometre)	=	0.621 371 mile
1 ha (hectare)	=	2.471 054 acres
1 m^2 (square metre)	=	10.763 9 square feet
1 km^2 (square kilometre)	=	247.105 4 acres
1 m^3 (cubic metre)	=	35.314 7 cubic feet
1 m^3 (cubic metre)	=	0.353 147 cunit
1 m^3 [stacked] (stacked cubic metre)	=	0.275 896 cord
1 m^2/ha (square metre per hectare)	=	4.356 00 square feet per acre
1 m^3/ha (cubic metre per hectare)	=	14.291 3 cubic feet per acre
1 fbm (foot board measure)	=	1 ft x 1 ft x 1 in or 144 in^3
1 MBM (thousand board feet)	=	1000 board feet
1 £ (litre)	=	0.219 969 gallon
1 kg (kilogram)	=	2.204 62 pounds